48414/B/1

27114

Comunicis
18/10/11

THE

CODE

OF

HEALTH AND LONGEVITY.

Engraved for the Code of Health & Longevity.

Neele sc. 352 Strand.

Petratsch Zortan, in the 185th Year of his Age.

He died on the 5th. Jan^{y}. 172$\frac{3}{4}$.

from a Picture formerly belonging to the Percy's Earl of Northumberland, and now in the poſseſsion of William Bosville Esq^{r}. of Welbeck Street, London.

2114

THE

CODE

OF

HEALTH AND LONGEVITY;

OR,

A CONCISE VIEW,

OF THE PRINCIPLES

CALCULATED FOR

THE PRESERVATION OF HEALTH,

AND

THE ATTAINMENT OF LONG LIFE.

BEING AN ATTEMPT TO PROVE THE PRACTICABILITY, OF CONDENSING, WITHIN A NARROW COMPASS, THE MOST MATERIAL INFORMATION HITHERTO ACCUMULATED, REGARDING THE DIFFERENT ARTS AND SCIENCES, OR ANY PARTICULAR BRANCH THEREOF.

BY

SIR JOHN SINCLAIR, BART.

VOL. I.

Neque enim ulla alia re homines propius ad Deos accedunt, quam salutem *hominibus dando.*—CICERO, PRO LIGARIO, C. 38.

EDINBURGH:
PRINTED FOR ARCH. CONSTABLE & CO.; AND T. CADELL AND
W. DAVIES, AND J. MURRAY, LONDON.

1807.

Edinburgh:
Printed by D. Ramsay & Son.

WELLCOME
HISTORICAL
MEDICAL
LIBRARY

ADVERTISEMENT

TO

THE WORK IN GENERAL.

Novbr 1st 1873

X

THIS work was undertaken, with a view of ascertaining how far it was practicable, to condense and systematize human knowledge, regarding any particular branch of science, the necessity of which, is becoming every day more apparent *. For that purpose, the author, with as much diligence and industry as many other avocations would admit of, examined a number of publications on the subject of health and longevity, and collected as much new information as it was possible for him to obtain, from a variety of intelligent friends and correspondents, both in this and in other countries. In the first volume of the following work, the materials thus accumulated are digest-

ed,

---

* We are told, that there are about three hundred and fifty thousand printed volumes in the National Library of Paris, and between seventy and eighty thousand manuscripts.—See Pinkerton's Recollections of Paris, Vol. I. p. 50. As there must be a number of works in other languages not in that library, the total number of volumes now in print, cannot be much short of five hundred thousand. There, surely, cannot be a stronger argument, in favour of condensing human knowledge as much as it is practicable. Such immense masses of printed paper, can answer no good purpose, and are a heavy load upon literature, and the acquisition of useful knowledge.

ed, according to the best plan that he has hitherto been able to devise. In the other volumes, the sentiments of various writers, both ancient and modern, and the communications to the author himself, are contained. In order to complete the original intention, the first volume of the work, at least, should be translated into the principal languages of the Continent, circulated among the learned men, both in Europe and America, and premiums given to those who transmitted the best observations or commentaries upon it. A work would thus ultimately be produced, which would probably put an end to all difficulties, and remove every doubt, regarding the means of preserving health and attaining longevity.

That such a work would be of infinite consequence to mankind in general, can hardly be questioned; for every individual might thus be furnished, whenever he wished to acquire it, with a mass of useful information, regarding points of a nature peculiarly interesting, and which, in general, is rarely learnt, till after long experience, and at an advanced period in life, when it is seldom of much importance.

It cannot, at the same time, be supposed, that attention to printed directions, will preserve any individual in existence, for many years beyond what otherwise would be the case.—Besides, a man may exist for too long, as well as for too short a period. He may become, indeed, like the inhabitants of the vale of Guldbrand in Norway, who, it is said, live to such extreme old age, that they are at last weary of life, and cause themselves to be removed to a less salubrious climate, that they may have a better chance of dying the sooner *.—This, however, can but rarely happen. In regard to the present work, (more especially were it completed in the manner originally proposed), the author has no hesitation in asserting, that though any great extension of human life cannot be expected, yet if any person, possessed of a plain, but sound understanding, and whose health is not materially injured, will carefully peruse the following pages, *and will apply the facts and observations therein contained, to his own particular case*, occasionally calling in the assistance of an intelligent medical friend, when any important alteration takes place in his constitution, or bodily functions, he can hardly fail to add, from ten to twenty, or even thirty years, TO HIS COMFORTABLE EXISTENCE.

JOHN SINCLAIR.

Charlotte-Square,
Edinburgh, 12*th January* 1807.

---

* This curious circumstance is alluded to in Pontoppidan's Natural History of Norway, Vol. I. p. 23.—'The most pure and kindly air, I judge to be in the middle of the country, especially about the mountains, where the inhabitants have hardly an idea of sickness, unless it be hereditary, or contracted by intemperance. It is reported, though I will not warrant the truth of it, that, in the vale of Guldbrand, which is regularly visited by very salubrious gales, especially in the parish of Læssoe, there are persons of such an extreme old age, that, from a lassitude of longer life, they get themselves removed elsewhere, in order to die the sooner.'—Mary Campbell also, a very old woman, who lately died at Edinburgh, being asked, if she wished to live any longer? emphatically answered,—'*Not an hour!*'—See Code of Longevity, Vol. II. Appendix, p. 266.

ADVERTISEMENT

TO

VOLUME I.

In drawing up the following volume *, one of three plans might have been pursued.

The first was, that of endeavouring to compose a work, consisting entirely of new matter. That attempt would probably have been fruitless, considering that the subject of this volume has been so often discussed by a number of intelligent and able men.

Another mode might have been taken, namely, that of adopting the thoughts of other authors, but endeavouring, by the use of other words and expressions, to hide the plagiarism. This, from its nature, must be the worst possible species of composition; for the finer the sentiments and the language of the original authors, the more defective must the copy be, for the sake of concealment.

The

---

* The three additional volumes, are intended for the use of those, who may be inclined to study the subject more minutely, and will probably be of service to practitioners, and others in the country, and in our settlements abroad, who have not access to public libraries, yet may be desirous of knowing the sentiments of great medical authorities, both ancient and modern, regarding the means of preserving health, and attaining longevity.

The third plan is the one which the author has pursued, that of endeavouring to consolidate the essence of the knowledge that has been already accumulated, arranging it in a proper form, and using the words and expressions of the original authors, where they could be adopted with propriety. This, though seemingly easy, was, in the present case, a very difficult undertaking, from the great extent of the inquiry, and the immense number of volumes, in which the facts and observations, which it was necessary to consider, were dispersed.

If the author, therefore, can claim any merit from this work at all, it can only consist, in the value of the materials he has collected, in the manner in which they are arranged, and in the reasons which induced him to form so laborious a compilation.

He trusts that the information which it contains, may contribute to diminish the distresses and sufferings of many of his fellow creatures, and may tend to render their lives more comfortable and happy, than could have been expected, without the dissemination of that knowledge which he has been at some pains to collect.

PRELIMINARY OBSERVATIONS.

ON THE ADVANTAGES TO BE DERIVED, FROM ARRANGING AND CONDENSING THE KNOWLEDGE ALREADY ACCUMULATED, REGARDING THE MOST IMPORTANT ARTS AND SCIENCES.

MANY ages have now elapsed, since volumes have been written regarding various arts and sciences, the most essential for the comfortable existence of the human race; and great additions have been made, from time to time, to the knowledge which was thus collected; but these additions are scattered throughout so many volumes, and published in such a variety of languages, that it would require many years of intense application, to be thoroughly master of all the facts and observations which have been already accumulated, not only regarding any art or science in general, but as to any one particular branch or subdivision thereof. Yet many branches, (for instance those of medicine), are so intimately connected together, that even the complete knowledge of any one of them, ought not to be considered as sufficient.

It has often occurred to me, that a plan might be formed, by which human knowledge, regarding at least some particular arts or sciences, might be so distinctly arranged, and condensed within so narrow a compass, as to diminish the necessity of perusing the innumerable volumes now extant on the same subject, and by which men in general might be better informed, and consequently would be better enabled to enjoy the pleasures of their existence, than they are at present. The system I had formed for that purpose, I shall endeavour briefly to explain.

Let any art or science be fixed upon, for example *Physic:* Let it be divided into several branches, as, 1. *Anatomy*, or the construction of the human body; 2. *Physiology*, or a knowledge of the functions which its various parts perform when in health; 3. *Pathology*, or the doctrine of the alteration which its structure and functions undergo when in a state of disease; 4. *Practical Medicine*, or the art of curing its diseases by internal remedies; 5. *Surgery*, or the art of curing its diseases by external operations; and, 6. *Hygiene*, or the art of preserving it in health.

Let us suppose, after this or any other division is adopted, that an intelligent person is employed to draw up an analysis of the whole, or of any branch of the proposed subject; let this volume, for instance, on Health and Longevity, be taken for an example.

If such a view of the subject, as is given in this work, be approved of, let it be translated, either at the expence of the Government, or of a society established for that purpose, into all the principal languages of Europe; and let premiums be given to those who will transmit the most valuable communications upon, or will point out the most essential improvements in, the volume to be thus circulated.

Let a collection also be made of every author, whether ancient or modern, who has written, either directly or indirectly, regarding the points in question; and let these works be thoroughly examined by intelligent men; and let every valuable fact or observation they contain be extracted out of them.

The labour attending this part of the plan, in the proposed undertaking, would be very great; for there are above a thousand works of different sizes, connected with the general inquiries regarding health and longevity, all of which ought to be considered with the greatest care, before these subjects could be completely discussed.

The whole mass of materials being thus collected, let an able person be appointed, with a committee of assistants, to digest the whole; and thus a work would be formed, capable undoubtedly of improvement by future observation and new discoveries, but which would contain all the material information hitherto accumulated. It might thence be accounted, a code or standard for a knowledge of that subject, in all time coming, and to which all future publications regarding it must necessarily refer.

Unless some such mode, of arranging and condensing human knowledge, is fallen upon, the world will be overwhelmed with a load of literature, without deriving, in any degree, that advantage from it which might otherwise be obtained.

INDEED, IN ITS PRESENT STATE, KNOWLEDGE MAY BE COMPARED TO A SMALL PORTION OF GOLD, DISPERSED THROUGHOUT A GREAT QUANTITY OF ORE. IN ITS RUDE CONDITION, THE STRONGEST MAN CANNOT BEAR ITS WEIGHT, OR CONVEY IT TO A DISTANCE; BUT WHEN THE PURE METAL IS SEPARATED FROM THE DROSS, EVEN A CHILD MAY CARRY IT WITHOUT DIFFICULTY.

As the preservation of health is one of the most important subjects to which the attention of mankind can possibly be directed, why not begin with that branch of inquiry? The volume herewith published contains an abstract or analysis of the principal facts and observations regarding the preservation of health hitherto known or published; yet many errors must necessarily have been fallen into, and many important particulars must have been omitted. The circulation of this work, however, not only at home, but in foreign countries, might be the means of correcting all these errors, and of collecting all the additional information essential for the purpose. Would it not be creditable for any country to have the experiment tried? The expence would not be considerable, whereas the advantages resulting from it would be of inestimable value: And if once such a plan succeeded regarding one particular point, the same system might be transferred to another, until every branch of knowledge, likely to promote the comfort and happiness of human nature, was brought within a small compass, and rendered easily accessible.

PLAN OF THE WORK,

WITH AN ACCOUNT OF THE CIRCUMSTANCES WHICH LED THE AUTHOR TO ENGAGE IN THIS UNDERTAKING.

THE experience of ages sufficiently demonstrates, that the human frame was formed by Nature merely for temporary existence. At his first appearance, no part of the animal creation is in a more helpless state than man. Unable to provide for his own wants, he must rely on the care and protection of others for food and raiment. He gradually acquires a considerable proportion of bodily strength. In process of time, he reaches a degree of intellectual ability beyond the animals around him. But after possessing for some time these powers, his strength decays, his sagacity diminishes, his frame loses its animation, and he ceases to live. Such is the invariable lot of the species; even of those who are the most fortunate, the most healthy, and the most robust.

It is observed, however, though all must die, yet that some individuals live for a shorter, and some for a longer period; that while some perish during infancy or youth, the existence of others is prolonged for many years.

It is also remarked, that while some individuals enjoy the possession of their mental and corporal powers, almost unimpaired, during the whole period of their existence; others are occasionally, and in some cases perpetually, in a sickly state; the one of course possessing the advantages of *health*; and the others being the victims of *disease*.

It has further been noticed, that many persons, by means of various remedies which experience has pointed out, have recovered from those disorders with which they have been afflicted, and from the personal accidents which they have unfortunately undergone, so as to regain their former health and strength.

Hence arises the threefold division of the general subject of Life and Health, namely, into the means, 1. OF PROLONGING LIFE, to which some authors have given the name of the Macrobiotic Art * (from Μακρος *long*, and Βῖος *life*): 2. OF PRESERVING HEALTH: And, 3. OF CURING AND ALLEVIATING DISEASE.

Of the means by which persons are relieved from the various disorders and accidents to which they are liable, it is not the object of the intended volumes to treat. Such particulars comprehend the arts of Medicine and of Surgery. There, a vast and extensive field opens itself; to the cultivation of which, thousands of able men have directed their attention, and in many respects successfully, though these arts have not hitherto reached that degree of perfection, which it is so desirable, for the comfort of human nature, they should attain.

---

* The Germans, so much distinguished for the depth of their researches, have endeavoured to erect the *Macrobiotic Art* into a separate science; contending, that many diseases, which the medical art would consider as evils which cannot be too soon expelled, may be the means of prolonging life; and that there are many remedies, which elevate mankind to so high a degree of strength and physical perfection, as may tend to accelerate life, and to shorten its duration. (See the Art of Prolonging Life, by Professor HUFELAND of Jena, translated from the German, in two volumes, 8vo. Printed *anno* 1797, preface p. 11.) This may have some foundation, and such a distinction may exist in particular cases; but still, for general purposes, the means of preserving health and prolonging life, *when properly viewed*, are the same; for few there are, who would wish to continue in life, without the possession of health, or the prospect of regaining it.

Of the other two objects, however, the means of Prolonging Life, and Preserving a state of Health, (not as distinct propositions, but as being, *when properly viewed*, so intimately blended together, that they can hardly be separated*), it is the intention of the Author to treat. What inquiry can be of more real importance? If health be the greatest blessing of life, and if disease render man miserable, what can be more desirable than to ascertain the means of preserving the advantages of the one, and of counteracting the ravages of the other? If by prolonging our existence also, we can be of more service to mankind, from the superior knowledge which greater experience and longer observation must generally furnish, what can be more important than to endeavour to preserve our health and strength, that we may be the better enabled to perform beneficial and useful actions? For, THE POWER OF DOING GOOD, IS THE PROPER LIMIT BY WHICH OUR WISHES FOR EXISTENCE OUGHT TO BE BOUNDED.

---

* In this respect I have ventured to differ from the celebrated Lord BACON.

In his work, *De Augmentis Scientiarium*, Lib. 4. cap. 2. he divides medicine into three parts: 1. The preservation of health: 2. The curing of disease: and 3. The prolongation of life; which last part, he says, physicians do not seem to have acknowledged as a principal part of their art, but to have mixt it, unskillfully enough, with the other two. For they think, if diseases are kept off before they assail us, and cured after they have seized upon us, prolongation of life will follow of course. He afterwards remarks, that the art of prolonging life is the noblest part of medicine; for, if means to that effect could be discovered, medicine would not only be employed in the humbler office of cures, nor physicians themselves be only honoured on account of their necessity, but they would be reckoned benefactors to mankind, for dispensing that greatest of earthly blessings, which mortals, by their means, would enjoy.

It is very doubtful, however, in the first place, whether any means of prolonging life, to any considerable degree, can be discovered: and, in the second place, if it could, it would be of no real service, unless health and strength, and the mental faculties, could at the same time be preserved. Hence, though health and longevity, strictly speaking, may be distinctly considered, yet, *when properly viewed*, as the possession of the one, namely, long life, is so little to be desired without the other, it does not seem necessary to separate them.

It is the more necessary that the attention of the public should be frequently directed to this most interesting subject, because men, when living in an artificial or civilized state, are more apt to become unhealthy, and to perish at an earlier age, than in a more simple state of society. In periods of civilization and luxury, it must often happen, that they are bred up with improper indulgence, or perhaps affected by a predisposition to hereditary disease. Their food, also is generally less wholesome, perniciously prepared for the table, and often taken in destructive quantities. Fermented liquors are almost universally made use of, a practice which, if carried to any degree of excess, is a certain source of disease. Instead of frequently imbibing the invigorating influence of a pure atmosphere, individuals, in luxurious ages, are too apt to shut themselves up in warm houses, and hence are liable to disorders, when again exposed to cold air, without perhaps taken proper precautions; are enervated by the immoderate use of fuel; are deprived of regular exercise; are exposed to the baneful effluvia of great cities; are improperly clothed, out of caprice or fashion; are obliged, both with regard to food and rest, to follow the pernicious practice of late or irregular hours; are employed in various unhealthy occupations; liable, as the intercourse of nations becomes more frequent, to a number of infectious disorders; and lastly, induced, from an anxious wish to secure, at all hazards, the acquisition of wealth, to reside in unhealthy climates, amidst disease and contagion.

In civilized society, also, there is an additional source of debility and disease, from the influence which the mind has upon the body. The pursuits of ambition; the contests for power; the rage for commercial speculation; the vexation and anxiety resulting from inordinate expences; the difficulty of keeping up, when the demands of the public become very great, that mode of living to which individuals have been accustomed; the distress which necessarily arises from the misconduct of near relations and friends, more usual in luxurious and degenerate ages; to which may be added, the horrors attending those revolutions, by which, in more recent times, the world has been afflicted: by these, and other circumstances, the mind is deeply affected, the health of the individual suffers, and he becomes afflicted with many disorders from which he would have otherwise been exempted.

When all these particulars are considered, it surely can require little apology from any person, who has applied his mind to such subjects, for venturing to lay before the public his ideas concerning them.

It may be proper, at the same time, briefly to explain, how an individual, unconnected with the medical profession, has been led to pay such particular attention to the subjects of Health and Longevity, as to consider himself competent to the task of instructing others regarding such interesting particulars.

Though naturally possessed of a sound constitution, untainted by any hereditary disease, yet, about six or seven years ago, the author had fallen into a weak and enervated state, and found himself unequal to the task of managing his own private concerns, of prosecuting useful inquiries or of applying his mind to political pursuits, with his former energy and zeal.

As age advanced, he found many of his contemporaries either getting into a declined state, or sinking into the grave, much sooner than he had expected. The causes of these events he naturally wished to ascertain, and to determine whether so premature a decay might not have been prevented.

In carrying on his Statistical Inquiries, (a branch of which namely, the effects of climate, was necessarily connected with the points in question), it was a matter of astonishment to him to find, how few of the human species, in proportion to the numbers born, attained any considerable extent of years, even in the healthiest countries.

Above all, it was a matter of regret, (and the longer one lives the more striking it becomes), that even while men do live, their existence is too often embittered by disease, and their life a burden both to themselves and to others.

These circumstances united, naturally directed his attention to the subjects of Health and Longevity.

He began by endeavouring to procure the re-establishment of his own health, in which, with the assistance of some eminent Physicians, he has happily succeeded; in so much that he is now enabled to take as much mental and bodily labour, as any person, it may be presumed, could undergo at this time, who was born in the year 1754, who had fallen into a weak and delicate state, and who had, for above thirty years past, been engaged in laborious and exhausting pursuits. Indeed, nothing but a complete restoration of health could have induced him to engage in a work like the one which he has now undertaken, and which must necessarily be attended with no common degree of fatigue and exertion.

He next ventured to give hints to others, whether advanced in life, or in a sickly state, how they might secure the same advantages, which he had derived from his extensive

sive inquiries; and he has had the satisfaction of receiving the most grateful acknowledgments from various persons, in all ranks of life, for the benefits they have received, by the adoption of the rules which he recommended.

Thus, confirmed in the opinion he had formed of the advantages to be obtained from such inquiries, he was at last induced to think of a greater and bolder attempt, "*That of* "*instructing his fellow creatures in general, how they could best* "*preserve their health, and attain a comfortable old age.*"

If an ancient maxim be true, *Experientia docet*, the Author has some pretensions to a knowledge of these subjects, from his own observation and experience; and, in the progress of the intended publication, he will necessarily detail the means by which his own health was restored. It will thence appear, that the preservation, and the restoration of health, depend much on minute and unremitting attentions to Clothing, Diet, Air, Exercise, Habits, &c. which, taken singly, appear even trifling, but when combined, and regularly observed, are of infinite importance. Rules, with respect to these particulars, he was at considerable pains to collect, from a number of intelligent individuals now living, or lately deceased, as well as from personal observation. He considers them to be a valuable part of the intended publication, as several of them are not to be met with in any work hitherto printed. Had they been known to him thirty years ago, his own health would not have suffered as it did, and many irksome hours would have been avoided. By the observance of these rules, he is persuaded, that men, instead of living recluse, or weighing their food, measuring their drink, and the like niceties, may, with moderation and prudence for their guides, mingle in the usual train of civilized or artificial society, without suffering in their health, or shortening the period of their existence.

Having printed, both in English and French, a short Treatise on Health and Longevity, accompanied with several questions, in order to obtain additional information, he has thence fortunately procured a variety of important communications, in manuscript, both from foreign and domestic Correspondents, by which the intended Work will be considerably enriched.

But, in particular, he has to rely on the treasures of knowledge, regarding Health and Longevity, published by various authors who have already written on these subjects, and of whose works he has made a collection, to the number of about two hundred distinct treatises or volumes, every one of which, either directly or indirectly, is connected with the proposed inquiry. From this immense mass, he proposes to extract whatever seems to be peculiarly valuable.

On subjects, respecting which so many volumes have been written, it will not be easy to draw up a new work, the form of which will give universal satisfaction, as many will desire a more condensed, and many a more detailed explanation.

To gratify the first, it is the Author's intention, when his inquiries are completed, to consolidate into One Volume octavo, all the knowledge which he considers to be *essentially necessary* for the attainment of Health and Longevity. The generality of mankind will not have leisure to read, and many of them cannot afford to buy a larger publication.

But for those who may be desirous of investigating the subject farther, he intends to print, in Four Volumes octavo, distinct from the other work, but to be published at the same time, an account of the writings and opinions, 1. Of Ancient; 2. Of Foreign; and 3. Of British Authors, who have discussed the subjects in question.

Those who may be desirous of being more thoroughly acquainted with these subjects, will thus be furnished with a catalogue of the authors whose works they may collect, for the purpose of an examination still more minute, either for their own personal satisfaction, or for giving to the world another publication, adding to, or improving on, the work which is now submitted to the public. /

Such is the general nature of the work.—It will next be proper to explain the particular points which it is intended to discuss.

The medical authors, who have hitherto written on health, have commonly restricted their observations to six general heads: 1. Air; 2. Diet; 3. Motion and Rest; 4. Sleeping and Watching; 5. Retention and Excretion; and, 6. The Passions of the Mind. To these they have given the singular name of the six NON-NATURALS, from the idea, that though, if they were managed with prudence, they might be entitled to the name of Naturals, yet as they are much oftener abused, and thence are the source of various disorders, they are more frequently acting against, than with nature, and therefore may be properly termed *Non-Naturals* *. Some authors on health have also gone into the discussion of what they call *Non-Necessaries* †, in which they include clothing and the professions of life. But as such a mode of explaining the doctrines of health and longevity, is in many respects defective and exceptionable, it is not proposed to adhere to it upon the present occasion.
The

---

* LYNCHE's Guide to Health, p. 61. MACKENZIE, in his History of Health, Introd. p. 4. gives a different account of the compound word *non-natural*, which, he says, originated from the jargon of the Peripatic schools. It was first mentioned by GALEN, who divides things relating to the human body into three classes: Things which are *natural* to it; Things which are *non-natural;* and Things which are *extra-natural.* (Class 7. lib. de Ocul. Partic. tertia, e. 2). From this fantastical distinction, the epithet Non-natural, he says, first arose.

† STROTHER's Essay on Sickness and Health, p. 445.

The most natural division of the subject under consideration, seems to be, to point out,

1. The circumstances which necessarily tend to promote health and longevity, independent of individual attention, or the observance of particular rules.

2. The rules, which, if observed by an individual, have a tendency to preserve health and existence, even where these circumstances are wanting. And,

3. The regulations by which the general health and safety of a great community are protected from the various injuries to which they are likely to be exposed.

PART I.

CIRCUMSTANCES which necessarily tend to promote HEALTH and LONGEVITY, independent of individual attention, or the observance of particular rules.

IT will hardly be disputed, that while individuals differ so much from each other with regard to a variety of important particulars, as the climate in which they reside, the manner in which they are formed, &c. that there must necessarily be a material difference with respect to their health and the duration of their lives. It is essential, therefore, in the first place, to ascertain what these particulars are. It seems to me that they may be all comprehended under the following general heads:

1. Circumstances connected with the person of the individual, as, 1. Parentage; 2. Perfect birth; 3. Gradual growth; 4. Natural constitution; 5. Form; 6. Sex; and, 7. Where nature makes an effort to renew the distinctions of youth.

2. Circumstances connected with the mind of the individual, whether relating, 1. To the faculties of the mind; or, 2. To its passions.

3. Circumstances connected with the place where any individual resides, Whether, 1. In a hot, a cold, or a temperate climate; 2. Whether in a high or in a low situation; 3. Whether to a southern or other exposure; 4. Whether on the sea-shore, on the banks of a lake or a river, or at a distance from water; 5. Whether in the neighbourhood of woods or otherwise; 6. Whether in a dry, a clayey, or a marshy, soil; 7. Whether with an abundance, or a scarcity of fuel; 8. Whether in a wet or dry atmosphere; 9. Whether on a continent, in a large island, or in a small one; and, 10. Whether in a town, a village, or in the country.

4. Adventitious or miscellaneous circumstances; as, 1. Rank in life; 2. Education; 3. Occupation; 4. Connubial connexion; and, 5. Exemption from accidents.

Where a favourable condition of all, or the greater part of these circumstances occurs, there health and longevity may be expected.

PART II.

RULES for preserving HEALTH and promoting LONGEVITY.

IT is evident, that if men lived uniformly in a healthy climate, were possessed of strong and vigorous frames, were descended from healthy parents, were educated in a hardy and active manner, were possessed of excellent natural dispositions, were placed in comfortable situations in life, were engaged only in healthy occupations, were happily connected in marriage, &c. &c. there would be little occasion for medical rules. But it is universally known, that some individuals enjoy only a part of these advantages, whilst others possess hardly any of them complete. Hence arises the necessity of attending to those *rules*, which observation and experience have pointed out, as being the most likely to counteract the disadvantages, arising from so material a want, as of any of the natural or incidental advantages above enumerated. These rules relate,

1. To objects *essential* for man in every situation, and without which he cannot exist, even in a state of nature ; as,

1. Air ;
2. Liquid food ;
3. Solid food ;
4. Digestion ;
5. Labour, or exercise ; and,
6. Sleep.

2. To articles not so essential, but which are *highly desirable*, more especially for men in a state of civilization, and refinement ; these are,

1. Clothing ;
2. Habitation ;
3. Amusements ; and,
4. Medicine.

And, 3. To articles of *a miscellaneous nature* ; as,

1. Temper ;
2. Habits ;
3. Cleanliness ;
4. Bathing ;
5. Relief from accidents ; and,
6. Travelling, or change of residence.

It is proper to observe, that many of these rules are not applicable to all situations, but must vary according to climate, constitution, the progress of life, &c. ; *and that the object of this publication is, merely to give information, regarding the general system that may be pursued, leaving it to each individual, to apply the rules therein recommended, according to times and circumstances.*

PART III.

REGULATIONS for the HEALTH of the COMMUNITY.

It is in vain, however, that either nature has formed an individual for long life, or that he observes all those rules which are necessary for the preservation of health, unless attention be paid by the Government of a country, to the happiness and safety of its subjects. This is a point which has seldom been attended to in the manner in which its importance deserves. While the attention of Lawgivers is unceasingly directed to a variety of less important objects, those regulations on which the safety of the people at large depend, are unfortunately neglected. Yet what can be more pernicious, than to suffer the climate of a country, for instance, to continue noxious to the health of its inhabitants, merely for want of drainage, cultivation, and improvement, when thousands of instances might be adduced of the advantages which have resulted from the adoption of an opposite system? What can be more impolitic than to permit unwholesome provisions and other articles to be sold, without punishing those who thus attempt to injure the health, perhaps to destroy the existence, of their fellow creatures? What more dangerous than to permit public amusements of a pernicious nature; to authorise improper customs; to neglect the education of youth, when the foundation ought to be laid of their future health and strength; to suffer public institutions to become the seminaries of disease; to disregard the safety of those who are trained for the public defence*; to sanction the sale of noxious or doubtful medicines;

---

* The *Ophthalmia*, which has spread through so many of those gallant corps who served in Egypt, is a disgrace to our military medical police.

cines; and, above all, to permit the least risk of contagious disorders being admitted into a country, by which its whole population may be affected?

The Police of Public Health, therefore, is a most important branch of the proposed inquiry; and the events which have recently happened in Spain and at Gibraltar have given it additional interest. It may be treated of under the following general heads;

1. Police of Climate.
2. Police of Physical Education
3. Police of Diet.
4. Police of Public Amusements.
5. Police of Habits and Customs.
6. Police of Public Institutions.
7. Police for the Health of Sailors and Soldiers.
8. Police to prevent contagious disorders. And,
9. Police of Medicine, and the Means of promoting its improvement.

But though it may be proper to give a general view of these important subjects, it is not intended to enter much into detail, as the Police of Public Health, to do it ample justice, would require a separate and very extended discussion.

CONCLUSION.

SUCH is the plan of the intended Work, which others might doubtless have executed with more ability, but none with a more anxious wish, that it may prove *substantially serviceable* to the interests of human nature; or, at any rate, useful to those, who may apply their talents and industry to render the investigation therein carried on, still more complete.

PART I.

ON THE CIRCUMSTANCES WHICH NECESSARILY TEND TO PROMOTE HEALTH AND LONGEVITY,

INDEPENDENT OF INDIVIDUAL ATTENTION,

OR

THE OBSERVANCE OF PARTICULAR RULES.

INTRODUCTION.

ON THE STRUCTURE OF THE BODY OF MAN, AND THE TENDENCY OF THE HUMAN FRAME TO DECAY, AND TO PERISH.

BEFORE we proceed to point out the means by which the health of the man may be preserved, and the human frame may long be kept in a comfortable state of existence, we have thought it advisable, previously to consider two important particulars, connected with the present inquiry. 1. The general nature of the structure of that frame; and, 2. Its unavoidable tendency to decay, and to perish.

1. OF THE STRUCTURE OF THE BODY OF MAN.

WHEN the form of man is first seen, the beauty and symmetry of its outward or external shape, must naturally strike every intelligent beholder *: But when it is examined internally, its structure appears still more astonishing.

It is to anatomy that we are indebted for the intimate knowledge we have acquired of this wonderful fabric. But as to many of our readers, the terms which anatomists make use of, cannot be very generally intelligible, we shall endeavour to explain, in more popular language, the result of their researches.

Man may be defined, "a being, in whom reason or "spirit, and body or matter are united, and whose exist-"ence depends upon that union; for the individual who "loses his reason, unless preserved by the care of others "from destruction, would soon perish †."

As without the possession and the exercise of reason, man could not exist for any space of time, it is necessary that the mind, and the reasoning and other faculties connected therewith, should be furnished with a proper place of residence; accordingly, she is provided with the brain, where

---

* Milton has most beautifully described the appearance of man, as it would strike any being who first saw it.

> "Godlike erect, with native honour clad,
> "With wisdom, sanctitude severe and pure;
> "For contemplation, and for valour formed,
> "His fair large front, and eye sublime, declar'd
> "Absolute rule." *Paradise Lost, B. IV.*

† In the Philosophical Transactions, Vol. XXVI. p. 170. an account is given of an idiot, who swallowed several brass and iron instruments, which were found in his stomach, when he was opened. Hence it would appear, that, without reason, man could not distinguish what was fit to be eaten.

where she dwells as governor or superintendant of the whole fabric *.

As the mind must hold a correspondence with all the material beings which surround her, she must be supplied with organs fitted to receive the different kinds of impressions which they will make. With those, or *the organs of sense* as we call them, she is provided; the eye is adapted to light; the ear to sound; the nose to smell; the mouth to taste; and the skin to touch †.

Not only are these organs of sense necessary, but it is also essential to have *organs of communication*, to give information to the mind of all the impressions made upon the senses, and fitted, at the same time, to convey her commands over the whole frame. For these purposes, the nerves were actually given. They are chords which arise from the brain, the immediate residence of the mind, and disperse themselves in branches throughout all parts of the body. They convey all the different kinds of sensations to the mind, in the brain, and likewise carry out, from thence, all the commands, or the impressions she wishes to give to the different parts of the body.

The human frame, however, could scarcely be said to exist, unless endued with the power of moving from place to place, for

---

* The following description of the structure of the human body, is principally taken from Dr Hunter's introductory lectures to his last course of anatomical lectures, printed anno 1784.——See also Mead's Medical Works, p. 352.

† It is a circumstance well entitled to be observed, that the two most important of our senses, namely, the sight and the hearing, have double organs by which their sensations are communicated to the mind. By this admirable provision, we are enabled to see or to hear every where around us; and the animal is in some measure prepared for the misfortune of the loss of one of these noble and necessary organs of the body.——See Derham's Physico-Theology, Vol. I. p. 147.

for the purpose of being enabled, not only to hold an intercourse with a variety of objects, but also to fly from such as are disagreeable, dangerous, or hurtful, and to pursue such as are pleasant or useful. This is obtained by means of the limbs, the muscles, and tendons, the instruments of motion, which are found in every part of the fabric, where motion is necessary.

But to support, and to give firmness and shape to the fabric, to keep the softer parts in their proper places, to give fixed points for, and proper direction to, its motions, as well as to protect some of the more important and tender organs, from external injuries, there must be *some firm prop work* interwoven throughout the whole; and, in fact, for such purposes the bones are intended.

The prop work must not be made into one rigid fabric, for that would prevent motion; hence the advantage of having a number of bones firmly bound together by the ligaments, to prevent their dislocation; and the extremities of these bony pieces, where they move and rub upon one another, must have smooth and slippery surfaces, for easy motion, which nature has happily provided for, by what are called the cartilages of the joints, and the synovia, or joint-oil.

There must also be an outward covering over the whole apparatus, both to give it a firm compactness, and to defend it from a thousand injuries. These are the purposes of the skin.

As this body is intended for society and intercourse with other beings, more especially of the same species, it is necessary that it shall be endued with the means of expressing and communicating its thoughts, by sensible marks or signs. For this purpose, it is provided with the organs and faculty of speech, by which it can throw out signs with amazing facility, and vary them without end.

food, it is thereby reduced to pulp, and is afterwards changed in the stomach, (partly by the action of that organ itself, and partly by a juice secreted in it), into two parts, one resembling milk, which is nutritious, and is conveyed by the lacteals to repair the waste of the blood ; and the other into matter, which, on undergoing a farther change, by the admixture of gall, becomes excrementitious.

For various important purposes in life, also, it is endued with organs of respiration, which are indeed essential for animal existence. By means of these organs, the blood undergoes changes of colour, and is deprived of noxious matter, whilst it acquires matter that is useful ; and that vital warmth is kept up, without which no animal could exist.

Thus the animal is furnished with every article necessary for its immediate existence, and also with the means of prolonging its duration : But as all animals, after being nourished and reared up to their full strength and utmost perfection, must, in process of time, begin to decay, and must ultimately perish, the means of renovation are necessary, and this is provided by the creation of animals of different sexes, by whom the species can be multiplied without end.

If we compare the animal above described, with any machine in which human art has exerted its utmost skill, for instance, the best constructed watch that ever was made, we shall soon be convinced, beyond the possibility of doubt, that there is a degree of intelligence and power in the formation of that animal, far surpassing what man is capable to execute.

The powers which it possesses, mock all human invention or imitation, and are characteristics of a much superior artist.

Such a being, however, as is above described, would soon perish, unless provision were made for its duration; and not only for repairing the injuries it may commit upon itself, but also those to which it must be exposed from others. A treasure of blood is therefore actually provided, full of nutritious and healing particles, and capable of being converted into bone, into muscle, into nerve, into gland, and, in short, into every other part of the body. Impelled by the heart, and conveyed by the arteries, it repairs the various parts of the human frame, which are in a perpetual state of decay; whilst, by other vessels, called absorbents, the digested food is conveyed from the bowels, into the mass of circulating blood, and any noxious, or useless matter is carried off from the body.

To prevent this treasure from being lost, unless in so far as is necessary for repairing the damages of the machine, the blood is kept in perpetual circulation, so as to return to the heart, whence it is again propelled for the purposes of fresh reparation. In the course of its being thus circulated also, whatever is redundant, useless, or noxious, in the mass of blood, is separated from it, and thrown out of the system.

But, as this store of blood would soon be exhausted, and the human machine would of course perish, it is necessary that provision should be made for fresh supplies. This is most effectually done in the following manner:—A variety of articles, belonging to the animal or vegetable kingdoms, are scattered around. The frame is provided with hands, the fittest instruments that could be contrived, for seizing and gathering them, and for preparing them in various ways to be consumed. These articles, which we call food, must first be conveyed to the stomach, and then converted into blood. To prepare them for the stomach, it is provided with teeth for cutting and bruising the food, and a juice, at all times prepared in the mouth, which mixing with the

2. ON THE TENDENCY OF THE HUMAN FRAME TO DECAY AND TO PERISH.

FROM the above imperfect sketch of the structure of the human frame, it is not to be wondered at, that the existence of so complicated a machine should be of short duration, more especially as it is not only exposed to internal decay*, but also every moment liable to a variety of external injuries.

Indeed when we examine the nature of the frame itself, more especially in the decline of life, we must be sensible, that the causes of our dissolution are inevitable, and that it is equally impossible to prevent the fatal period of death, as to change the established laws of nature *. In proportion as we become older, the bones, the cartilages, the membranes, the flesh, the skin, and every fibre of the body, become more solid, hard, and dry. Every part shrinks and contracts; and every movement is performed with slowness and difficulty. The circulation of the fluids is sluggish and interrupted; perspiration is diminished; the secretions change; digestion becomes slow and laborious; the nutritious juices are less abundant, and, being rejected by parts which are already too dense, they communicate no supplies. These parts, therefore, may be regarded as already dead, because they have ceased to receive nourishment. Thus, the body dies by degrees; its motions gradually decay; life wears away by almost imperceptible steps; and death is only the last term in the series †.

---

* The ingenious Dr Waterhouse of Cambridge, in New England, in a letter to the author, on the subjects of Health and Longevity, makes the following judicious observations on the decay of the human frame.

" There are certain periods of life, if I mistake not, which are scarcely " noticed by medical writers, viz. about the age of 36, when the lean man " becomes fatter, and the fat man leaner. Another between the years of " 43-4 and 50, when his appetite fails, his complexion fades, and when his " tongue is apt to be furred on the least exertion of body or mind. At " this period, his muscles become flabby, his joints weak, his spirits droop, " and his sleep is imperfect and unrefreshing After suffering under " these complaints, a year, or perhaps two, he starts afresh with renewed " vigour, and goes on to 61 or 62, when a similar change takes place, " but with aggravated symptoms. During the natural change that takes " place between 43 and 50, no particular organ suffers, but a gradual and " uniform *deterioration* supervenes. At this time he first experiences a reluctancy to stoop; he prefers a carriage to riding on horseback, and he " finds himself more affected by changes of the weather. He nevertheless commonly passes through this kind of " *moulting*," and regains his " health, with a little diminution of muscular strength, until he turn *sixty*: " then the gravity of age is more strongly marked, and he begins to boast " of his age and its prerogatives. This is the result of my observations " on others, compared with my own personal experience, which goes no " further than your own, being born in the same year, viz. 1754.

But, though a dissolution must take place, yet, as the prolongation of life, if accompanied by a comfortable state of existence, is certainly desirable, there are two points which

---

* Buffon, Vol. II. p. 477.

† This last sentence seems to be taken from Cicero de Senectute. "Ita "sensim sine sensu ætas senescit, nec subito frangitur, sed diuturnitate "extinguitur." The celebrated Dr Mead concurs in these doctrines. He observes, that his health consists in a regular motion of the fluids, together with a proper state of the solids, and diseases are their aberrations, which, as they are numberless, and one often produces another, it is next to a miracle, that the animal body should be able to hold out to extreme old age. But a body such as ours, cannot possibly retain life for ever, because, the membranous fibres of the blood vessels, which were made elastic, in order to drive their included juices forward, become gradually harder, and at length rigid, whence they are rendered incapable of executing their offices, and the secretions of the several parts are diminished by degrees. And that the useless juices are not sufficiently carried off by perspiration in old age, (a business very material to the continuance of life,) manifestly appears from dissections of the bodies of very old people, the

which it is essential for that purpose to ascertain; namely, 1. What those circumstances are, which necessarily tend to promote HEALTH AND LONGEVITY, independent of attention from the individual; and, 2. By what means HEALTH may be preserved, and LONGEVITY obtained, even where these circumstances are wanting.

We shall now proceed to the first part of the proposed investigation.

---

the insides of their arteries being sometimes found ossified here and there, whereby they had almost entirely lost their springiness, and the orifices of the natural ducts are often observed to be quite cartilaginous.—Of the Human Body, p. 346.

Lord Bacon thus explains his ideas regarding the necessary decay of the human frame.—The spirits, blood, flesh, and fat, are easily repaired after the decline of years, but the drier and more porous parts, as the membranes, all the tunicles, the sinews, arteries, veins, bones, cartilages, most of the bowels, in a word, *almost all the organical parts*, are hardly reparable; and to their loss, and ceasing to perform any longer their proper functions, the whole tends to dissolution.

Nothing, therefore, is more absurd than the idea, that the human frame can be preserved for ever, or even for a much longer period than at present. All specific remedies, as tinctures of gold, vital elixirs, balms of life, and other quackeries of the same sort, are ridiculous. If life can be prolonged, it can only arise from the natural advantages which any individual possesses; or from his following those rules which experience have sanctioned, as the most conducive to health.

It is the more necessary to impress these ideas on the mind of the reader, as not only quacks like Paracelsus, but even distinguished philosophers like Descartes, have imagined it possible to prolong life very considerably beyond the common period. Indeed Descartes declared, "*That, though* "*he could not venture to promise to render a man immortal, yet he was sure it was* "*possible to lengthen out his life to the period of the patriarchs.*" He died, however, at the age of 54. See Bayle's Dict. *voce* Cartes (Rene Des.)

PART I.

CHAP. I.

CIRCUMSTANCES CONNECTED WITH *THE PERSON* OF THE INDIVIDUAL, FAVOURABLE OR ADVERSE TO HEALTH AND LONGEVITY.

THE circumstances connected with *the person* of the individual, having a material tendency to promote health and longevity, and which, at the same time, are almost totally independent of any care or exertion on his part, are,—1. Parentage.—2. Perfect birth.—3. Gradual growth.—4. Natural constitution.—5. Form.—6. Sex;—and, 7. The efforts of nature to renew the distinctions of youth.

Each of these particulars it will be proper separately to consider.

1. PARENTAGE.

THERE is no circumstance which seems more to indicate health and probable longevity to any individual, than his being descended from healthy and long-lived ancestors [*]. It is well known, that children have a predisposition to suffer from the maladies of their parents [†]; and, on the same principle, they are well entitled to enjoy the perfections of those to whom they owe their birth. Indeed, in the course of all the numerous inquiries which we have made regarding this branch of the subject, it frequently appears, though the rule is far from being universal, that wherever any individual was distinguished for longevity, his progenitors, either on the paternal or maternal side, enjoyed a similar duration or length of life.

---

[*] This doctrine, says Camper, is of great antiquity; for both Hippocrates and Pliny have remarked, that though there are some exceptions, owing to the child suffering in the womb of the mother, yet, it is a general rule, that healthy parents will have healthy children.

[†] I am assured, by a very intelligent *accoucheur*, that diseases are often communicated from the parents, which destroy the embryo *in utero*, or prove fatal soon after birth. The most obvious proof of this kind, is the venereal infection being transmitted from the father to the fœtus, although in such a latent state in him, as neither to affect his own health, nor to produce disease in the mother of the child.

There is no doubt, he observes, that parents communicate to their children a pre-disposition to certain diseases. Many suppose, that this hereditary pre-disposition may be obliterated by suitable measures, but the proofs of this are not yet quite satisfactory. Whatever promotes the general health of the individual, must tend to remove any weakness or facility of derangement, depending on original corporeal structure, and perhaps nothing else can be done. Before experiments on this subject could afford any satisfactory evidence, they must be varied, and so multiplied, that, perhaps, no single individual could complete them. He adds, " I have some such experiments at present going forward, but " even although the result proves such as I hope, I could not rely impli- " citly on them as deciding the question."

Doctor Brown, who rejects the idea of hereditary taints, yet seems to admit that a certain *texture of stamina* is favourable to certain forms of diseases. Brown's Works, Vol. III. p. 255. There can be little doubt that chronical diseases depend much on the original conformation, or rather mal-conformation of certain parts or organs; and that the son should resemble his parent in these respects, is as natural as that he should have similar features.

Let it not be supposed, however, that having aged parents is an infallible criterion of long life. We see every day, how much, in this respect, persons even in the same family differ from each other; and how often the brothers and sisters of those, who have lived beyond a century, have died, some in infancy, some at manhood, and some at the other periods of life.

Indeed, the result of the most extensive and particular inquiry that has hitherto been made regarding old people, namely, the reports transmitted to the author from Greenwich and Kilmainham hospitals, and from the workhouses in London and the neighbourhood, proves to what extent the rule may be justly carried *. The number of individuals, beyond 80, contained in these reports, amount to no less a number than 598, of these 303 affirmed that they were descended from long-lived ancestors; but the remaining 295 either could not give any account of that important circumstance at all, or declared, that there was nothing remarkable in regard to the longevity of their ancestors. Though having aged parents, therefore, may give a predisposition to a lengthened duration of life, yet a variety of other circumstances, more especially those which are afterwards enumerated, as perfect birth, gradual growth, &c. must contribute thereto.

That long-lived parents should, to a considerable extent, have children likely to live long, is not to be wondered at. The same circumstance takes place in vegetable as well as in animal life. The seed of every tree, or plant, will produce a tree, or plant, of the same sort, and possessed of equal

---

* See Code of Longevity, Vol. II. Appendix. Nos. 7. 8. 9.

equal beauty and duration, provided two points be attended to.—1. That the seed be sound and wholesome.—And, 2. That it be deposited in a proper soil.

1. The seed must be sound and wholesome. Hence, in animal life, the advantage of being descended from ancestors, who have no taint in their constitution likely to affect the health of their progeny *. By some authors, the existence of hereditary diseases is totally disbelieved; though they acknowledge, that there exists a pre-disposition to that effect. But daily experience must satisfy every man of common observation, that there are many maladies, a disposition to which children will inherit from their parents, even where endeavours have not been wanting to check that tendency †. There are some instances, indeed, where by great

---

* Bacon well observes, that the immediate condition of the parents, as well of the father as of the mother, (to which there must be added the condition of the mother during her state of pregnancy,) availeth much; but the German authors certainly go too far, when they dwell on the state of the parents *in coitu.*

It is proper to remark, however, that persons with a scrophulous taint, often survive to a great age. An intelligent correspondent knew a person whose children had almost all died before their parent of that very complaint; who yet lived in good health to upwards of 80. If a person with a scrophulous taint, passes in safety the meridian of life, he often attains old age, or at least seldom falls a victim to that complaint.

† Doctor John Gregory has very properly recommended an inquiry into the history of the various circumstances in parents, that have an influence on conception, and the constitution and characters of their children.—See Lectures on the Duties of a Physician, p. 102. On this subject a curious case, recorded in the Annals of Medicine for 1801, has been recommended to my attention. At the age of 24, the Marquis Anthony Julius Brignole was first seized with epileptic fits. Previous to this period, his lady had born him one son; at that time she was pregnant with a second, when unfortunately she saw him under his first attack. When with child of a third, the same unlucky occurrence took place. A fourth son, and two daughters were begotten and born after the father was cured.

The

great care the gout, to which the father has been a martyr, has not affected the son, but unless the same care has been continued, the grandson suffers from the disease.

It is also to be observed, that the parent must be afflicted with the disease, before the child was born, or at least, that there must have been a previous taint in his constitution, otherwise, no pre-disposition or hereditary tendency takes place, there being, in this case, no retrospect. For instance, if no gouty taint had existed in a family, and if the parent was not affected by it, *till he had reached forty years of age*, all his children born previous to that period, would be exempted from it, whilst all those born afterwards could hardly escape a disposition to that malady.

2. The seed must not only be wholesome, but deposited in a good soil. And here it may be observed, how much, in regard to animal life, depends upon the healthy state of the mother. Indeed, it is confirmed by experience, that the state of the child's health, and the greater or less strength of its constitution, depends much more on the condition of the mother than that of the father. By a weakly father, a robust child may often be produced, provided the mother has a sound and vigorous body. On the other hand, the strongest man will rarely obtain a lively, healthy child, from a mother who is weak and sickly *.

There

The eldest son never had any epileptic symptom; the second son suffered much from epilepsy; and the third son, after having borne many attacks, died in an epileptic paroxysm. Neither the fourth son, nor either of the daughters ever had any epileptic symptoms.

May we not (says Dr Batt of Genoa, who reports the case), from these facts, reasonably infer, that the epilepsy in these two children owed its rise solely to the agitation of the mother, independent of the father's ailing? and that it was properly connate, and neither congenerate nor hereditary?

* Hufeland, Vol. II. p. 123. The celebrated Bacon also states it as a general position, that creatures, such as birds, which partake more of the

There is reason to believe that the outward shape, at least of the male, depends more upon the father than the mother, but that the talents and the structure of the mind are derived from the mother *. The first point is ascertained in this manner: If any person will compare a father of sixty and a son of thirty, he may possibly see very little resemblance; but if he will retain in his mind the image of the father at sixty, and compare it with the appearance of the son, when he approaches to that age, the similarity will become most striking, in regard to looks, voice, habits, &c., consequently, the original frames must have been, from the beginning, extremely similar. As to the second point, a clever woman has seldom children remarkable for deficiency of parts; nay, the abilities of many families may be traced to one distinguished female, who introduced talents into it, or, according to a common expression, *mother-wit*, which have descended not only to her children, but have become hereditary in her posterity †.

---

the substance of their mother than of their father, are the longest lived; and that those which have a longer time of bearing in the womb, partaking more of the substance of the mother than of the father, are consequently longer lived. He adds, "that even among men, (which we have "noted in some), those that resemble their mothers most, are longest "lived. And so are the children of old men, begotten upon young wives, "if the fathers be not diseased."

[*] There are certainly some exceptions to this rule, but I have no doubt of the justness of the general principle.

[†] This observation is verified in regard to two of the most distinguished families for talents in the united kingdom. The abilities and the eloquence of that branch of the Pitt family, who were created Earls of Chatham and Lords Camelford, was owing to a fortunate connexion they made with a Miss Innes of Redhall, in the Highlands of Scotland. The talents of the family of Dundas of Arniston, has also been attributed to the marriage of one of their ancestors to a Miss Sinclair, of the family of Stevenson, in East-Lothian.

In considering how much the healthiness of the children depends upon the condition of the parents, it has been suggested, that diseased persons should be prohibited to marry, as likely to produce nothing but disease, deformity, and political mischief *. This, however, would be going much too far. Yet nothing surely can be better founded, than strongly to recommend to those, who are likely to inherit any family disease, to be peculiarly circumspect in their manner of living, and to guard against its attacks, at least at an early period of their lives, by attention to air, to exercise, and to diet. It is certain, that family diseases have often, by proper care, been kept off for one generation †; and there is some reason to believe, that, by persisting in the same course, and forming judicious connubial connexions, such diseases might at length be wholly eradicated; and that a family constitution may be found as capable of improvement as a family estate ‡.

---

* See Hufeland, Vol. II. p. 128. and Domestic Medicine, p. 8.

† A respectable physician (Dr Wright) informs me, that the *Lepra Græcorum* will sometimes pass over one generation, but will assuredly break out the next.

‡ Buchan's Domestic Medicine, 18th edition, p. 8. In another part of his work, that intelligent author justly remarks, that the unhealthiness of parents must be a great source of the diseases of their children; and that it would be as reasonable to expect a rich crop from a barren soil, as that strong and healthy children, without great care from their birth till they reach maturity, should be born of parents whose constitutions have been worn out with intemperance or disease.

A delicate female, brought up within doors, and an utter stranger to exercise and open air, who lives on tea and other slops, may bring a child into the world, but it is hardly fit to live.

If, to the delicacy of mothers, we add the irregular lives of fathers, we shall see further cause to believe, that children are often hurt by the constitution of their parents. A course of vice must spoil the best constitution; and when once a disease is contracted and rivetted in the habit, it is in a manner entailed on posterity.

2. PERFECT BIRTH. X

It is well known, that nine calendar months are the proper period, during which the fœtus ought to remain in the womb of the mother*; and such is the beautiful arrangement which nature has made for its protection and nourishment, that should it be sooner expelled, in consequence of any accidental circumstance, no possible care or attention, after birth, can well compensate for the advantages of which it has thus been deprived †; though great care, or the circumstance of having healthy parents, will go far in remedying even this heavy misfortune.

There was formerly an idea that children of eight months growth, seldom, if ever, throve, whilst those of seven months might ‡.

It is certainly of great importance to the health of the child, and the future strength of the individual, that the fœtus should complete nine months in the mother's womb. As to the allegation, that children of eight months will not thrive, when those of seven months will, modern experience has proved that the idea is ill founded. It is now perfectly ascertained, that, with one exception §, the longer the fœtus remains *in utero*, after the seventh month, the stronger and healthier it proves; so that a child born at the end of the eighth month, has a better chance of living than one born before that time. It is incredible, at the same time, what variety, in degree of *vitality*, is observed in the fœtus. In some, the slightest circumstance destroys life, whereas in others, the vital principle is with the utmost difficulty extinguished.

---

* There is a good note in Hargrave's edition of Coke's Littleton, on this subject, (Vol. III. p. 188. 123. b. note 190.) It concludes with the following opinions of the celebrated John Hunter. 1. The usual period of gestation is nine calendar months, but there is very commonly a difference of one, two, or three weeks. 2. A child may be born alive at any time from three months, but we see none born with powers of coming to manhood, or of being reared, before seven calendar months, or near that time. The usual period is nine calendar months, or 270 days, and thence to 40 weeks, or 280 days.

† Hippocrates considers perfect birth so essential, that, in his book, *De Septimestri Partu*, he contends that children born in the seventh month seldom live long.

‡ Nay, Lord Bacon goes so far as to say, That a birth at the eighth month, is not only not long lived, but not likely to live. He adds, that winter births are accounted the longest lived, but this is probably too refined.

§ In some particular habits, if the fœtus remains beyond the eighth month

In regard to the question, whether a fœtus of seven months old may become a person distinguished for health and longevity, there is a living witness that such a circumstance may take place; for James Donald, an old man residing near Dunbarton in Scotland, aged about one hundred years, was born, it is said, in the seventh month.

As there ought properly to be but one child at a birth in the human race, among the cases of imperfect birth, ought to be enumerated, those instances where more infants than one have at once been produced. For, as Bacon has well remarked, the first breeding of creatures is ever most material; consequently a lesser compression, and a more liberal nourishment of the young one in the womb, tends much to long life. This happens, either when young ones are brought forth successively, as in birds, or when there are single births. In regard to the human race, when there are only twins, it does not seem to make any material difference; and an example has been transmitted to the author, from Montrose in Scotland, of twin brothers of the name of Watt, both still living, who have passed the eightieth year of their age*. This is, however, the only instance of such a circumstance that has reached our knowledge;

---

month *in utero*, it dies for want of nourishment or some other defect. Under such circumstances, premature labour has been brought on with the happiest effect.

* See Code of Longevity, Vol. II. Appendix, p. 62.

ledge; and it is believed, that no example can be produced of any case, where a greater number than twins have been distinguished for long life.

3. GRADUAL GROWTH.

LORD BACON seems to have been the first, who, by a careful and minute inquiry into the duration of the lives, both of man and of a number of different animals, established this important principle, that creatures in general lived in proportion to the slowness with which they reached maturity; and, indeed, this is the case in regard to the vegetable as well as the animal kingdom. It is a sign, he observes, that nature finishes her periods in larger circles.

It is owing to this circumstance, that people in cold countries, and whose growth is not accelerated by enriching food, or early debauchery, live much longer than the natives of warm countries, who are reared in a manner in a hot-bed, and who are full grown men and women at twelve years of age *.

Nay, the gradual expansion of the mental faculties, is almost as important as the growth of the person. It rarely happens that premature genius lasts long. Such prodigies seldom

---

* Buffon makes the difference between the southern and northern parts of Europe, in regard to their inhabitants reaching puberty, only two years. Vol. II. p. 411. But the difference is still greater, when compared with Africa, or the warm climates of Asia and America. It was owing to their avoiding early dissipation, according to Hufeland, that the great size and strength of the ancient Germans ought to be attributed; and it is to the same causes, that the great duration of human life, in many of the mountainous and insular districts of Scotland, is in some degree to be ascribed. Buffon remarks, (Vol. II. p. 411.) that children brought up in the country, or whose parents are poor, require two or three years longer to arrive at puberty, than the children of more opulent parents, because their food is not only bad, but given too sparingly. That very circumstance, however, by checking too rapid a growth, may be of service to them, or at least may promote their longevity.

seldom survive the fiftieth year of their life, and in general they perish at a much earlier period *.

Perhaps one principal cause why the duration of human life is, on the whole, lessened in periods of civilization and industry, is this, that all descriptions of men are brought forward too rapidly. The children of the poor are compelled to work, before their strength is at all matured, which injures their growth, and lays the foundation of future diseases. The children of the opulent, on the other hand, have their education unnecessarily hastened, and they enter into the world before they are fit to guard against its snares. It is certainly necessary, that a foundation be laid, in early youth, for the most essential branches of education, as grammar, writing, and arithmetic, and some knowledge acquired of the learned languages, and of the most important languages of modern times. If a good foundation, however, be laid, and if there be any turn or disposition for the acquisition of learning, it is astonishing how soon a youth of genius will acquire all the knowledge essential for the generality of the situations of life, without being too much hurried on. But if he be brought forward too early, he gets into company beyond his years, he must, to a certain extent, follow their example; he gets habits of dissipation; the growth, both of his body and mind is unfortunately accelerated, and he lays a foundation either for a sickly and miserable old age, or perhaps for a premature dissolution.

---

* The most extraordinary instance of early maturity recorded in history, is that of Louis the Second, King of Hungary, who, it is said, was born so long before the natural time, that he had no skin: In his second year he was crowned; in his tenth year he succeeded; in his fourteenth year he had a complete beard; in his fifteenth he married; in his eighteenth he had grey hairs; and in his twentieth he died. See Hufeland on Animal Life. As to weakly children, who are said *to be too wise to live long*, they get forward in point of talent, because they enjoy more of the company and conversation of their parents, from their inability to partake of the sports and exercises suitable to their years.

Though it is generally acknowledged, that the duration of life may be reckoned from the period required in growing to maturity, yet authors differ regarding the manner in which the result ought to be calculated. Buffon contends, that though man finishes his longitudinal growth, or arrives at his highest stature, when he reaches the sixteenth or eighteenth year of his age, yet that his body is not completely unfolded, in regard to thickness, before he has attained thirty. A man, therefore, who grows till thirty, ought to live till ninety or a hundred, or three times the period of his growth *.

Lord Bacon, on the other hand, considers it to be a rule of nature, that animals, in general, should live eight times the number of years which is requisite to the attainment of their perfect growth; and, on the idea that man attains to full maturity at twenty years, a strong presumption thence arises, that the age of man might be extended to one hundred and sixty years.

But Buffon justly remarks †, that persons of either sex, who are long before they arrive at their full growth, should outlive those who advance more rapidly to that point, because, in the latter case, the bones, cartilages, and fibres, are

---

* Buffon, Vol. II. p. 478.

† Buffon, Vol. II. p. 478. The following circumstance tends to prove the dangers of premature growth. The celebrated Berkeley, Bishop of Cloyne, took a strange fancy to know, whether it was not in the power of art to increase the human stature; and an unhappy orphan, called *Magrath*, appeared to him a fit subject for the experiment. It is not said what process he pursued for that purpose, but it is certain that the youth became seven feet high in his sixteenth year. He was carried through various parts of Europe for the last years of his life, and exhibited *as the prodigious Irish Giant*. But so disproportioned were his organs, that he contracted an universal imbecility both of body and mind, and died of old age at twenty. See Watkinson's Philosophical Survey of Ireland, one volume octavo, printed at London, anno 1777, p. 187.

are later in arriving at that degree of rigidity which is necessary to their destruction.

4. NATURAL CONSTITUTION.

IT is hardly to be credited, how much individuals, even those who resemble each other in several respects, vary in constitution or temperament *; and still more, such as differ in form, looks, size, complexions, &c. You will see one affected by the least cold, and another that can brave all the elements. One bears pain with ease and fortitude, whilst the least bodily trouble affects the other most severely. With some constitutions, all distempers are mild and gentle, whilst with others they are violent, and cured with difficulty. One person, you will find, liable to catch any contagious disorder, whilst another may visit, without hazard, houses the most infected with the plague or other similar malady. One is inclined to get fat and unwieldy, even at an early age, whilst others remain light and active, even to the close of life. In some, there seems to be a certain bodily and mental disposition to longevity; in consequence of which, many individuals, frequently under the most unfavourable circumstances, and in the most unwholesome climates, have attained to a great and happy age; whilst in others, the most salubrious country air, a district abounding with aged inhabitants, a strict adherence to the best rules of diet, a regular course of recreation and exercise, and, when necessary, the aid of the most skilful physicians,—

---

* Appearances in this respect are very deceitful: but the science of physiognomy has some foundation in nature, though its doctrines must be liable to much uncertainty.

sicians,—even all these advantages combined, are not sufficient to insure a long and healthy life*.

It would certainly be desirable to know, why the human body being equally organized, as far as anatomical observations shew, do not the same general causes produce the same effects upon all? What is the real difference between one constitution or temperament and another? Is it founded upon any difference in organization, hereditary or otherwise? Or is it only the consequence of a certain continued manner of life and habit †? It is said, that such questions are inexplicable by the laws of animal economy; and that the idea of distinct temperament is a chimera; nay, that if distinct temperaments did exist in nature, they must be altered by so many adventitious circumstances, that the consequences drawn from them must in general be erroneous. Instead of entering, therefore, into such abstruse speculations, we shall proceed to consider, what are the signs of a constitution, the most likely to enjoy health, and to attain longevity.

It is said, that the great Boerhaave, learned the characteristic signs of perfect health, from dealers in slaves, who, from long practice, necessarily become particularly well acquainted with the doctrines of signs or symptoms ‡; and some useful information might be obtained, by ascertaining the system pursued by them in such examinations. The following are the signs, which, according to medical authors, denote a good natural constitution, and prognosticate long life.

---

* Lectures on Diet and Regimen, p. 160.

† See letter from Chevalier Edelcrantz.—Code of Longevity, Vol. II. Appendix, No. ii. p. 11.

‡ Professor Finke's Medical Geography, Vol. I, p. 449.—" As soon as the negroes are landed, he observes, that they are immediately examined with regard to their health, as unblemished slaves are principally sought after. Slave dealers, therefore, are well acquainted with semiotics, (the doctrine of signs or symptoms), and I have some where read, that the great Boerhaave learnt the characteristic signs of perfect health from slave dealers. At the sale, many blemishes are attempted to be concealed, but those which are apparent, very much diminish the value of the slave. The

1. A sound stomach and organs of digestion; without which, it is impossible to enjoy good health, or to attain to great age. Lord Bacon justly calls the stomach, '*the father* '*of the family*;' for if it goes wrong, the whole body suffers. It is the principal and most important organ for the restoration of our nature; and, indeed, when our stomach is in good order, the passions, which are so often the causes of disease, have a less destructive influence on our bodies*.—2. A well organized breast, and organs of respiration; breathing being one of the most incessant and necessary of the vital operations, the means of rendering the blood, exhausted in the course of circulation, again capable of serving the purposes of life.—3. A heart not too irritable. Though the circulation of the blood is essential, yet it necessarily occasions a great waste, or internal consumption. Those, therefore, who have a hundred pulsations in a minute, must be wasted much more speedily than those who have only sixty. A stout uniform pulse accordingly is a strong sign of long life, and a great mean to promote it; whereas a pulse, either always quick, or where every trifling agitation of the mind, or other circumstances, increases its rapidity, can hardly be accompanied by long life. A certain degree of rest is absolutely necessary, that the nourishing particles may settle,

---

The want of a tooth, for example, makes a slave worth two dollars less. The purchaser is only allowed twenty-four hours to examine whether his slave be sound or not.

* See Tissot Essai sur les Maladies des Gens du Monde, p. 8.

settle, and be converted into the substance of our bodies.—4. A good temperament. The best is the sanguine tempered with a little of the phlegmatic. This produces a serene cheerful mind, moderate passions, undaunted courage, and that state of soul which is the most fitted for longevity.—5. A strong natural power of restoration and healing; by means of which, the losses we daily and hourly sustain, are not only repaired, but repaired well. This not only depends on a sound digestion, and a regular circulation of the blood, but also upon the perfect state of the absorbing vessels, and the organs of secretion, by means of which our nourishment not only reaches the place of its destination, but also perfectly pure, and completely freed from all extraneous and pernicious mixture. It is this circumstance which has enabled persons, as a Duke de Richelieu and a Louis XV. to attain great age, amidst a life of debauchery and fatigue; for, with such an advantage, consumption may be exceedingly strong, without the individual suffering much, if it be speedily repaired. Nor is a strong natural power of healing less advantageous, since it keeps back and removes the cause of disease. This is more especially exemplified in savages, who are in so healthy a state that the most dreadful wounds heal up without surgical assistance.—6. An uniform and faultless conformation of the whole body; as an imperfect structure gives an easy opportunity for the rise of local diseases, which may bring on death.—7. No particular weakness of any part; for, even where the organization is apparently good and perfect, there may be a secret enemy in some part or intestine, from which destruction may afterwards be conveyed to the whole body.—8. A medium quality in the texture of the organization, strong and durable, but not too dry or rigid; which latter qualities are extremely prejudicial to the duration of life.—In the last place, in the words of an eminent physician, *Sani denique hominis est, venerem appetere, et ad eam valere, et sobolem procreare* *; and, indeed, it seldom happens, that those who are in this respect deficient, or whose persons are mutilated, live long.

But it must not be supposed, that without a natural good constitution, the enjoyment of good health and longevity cannot be expected; many examples, as that of Galen and others, prove the contrary; and, indeed, it is to be observed, that strong constitutions sometimes do not last so well as the more feeble; for, in the first place, those who enjoy that advantage, are tempted to take less care of their health, and to use greater freedom with it; and, in the second place, they often suffer more from the same disease than those who have less energy to contend with it, the vehemence of the disorder being sometimes aggravated by the strength of the patient.

5. FORM OF THE INDIVIDUAL.

AMONG the various circumstances which necessarily tend to promote health and longevity, independent of attention to the observance of particular rules, there is none of more essential importance, than *the form* which the individual receives from nature; for it is evident, that, in so delicate a machine as man, any material fault, in regard to structure, must sooner or later be fatal.†

---

* Conspectus Medicinæ Theoreticæ, auctore Jacobo Gregory, M.D. edit. nova. An. 1790. Vol. I. cap. 1. p. 11.

† Plausible arguments, however, are not wanting, in favour even of deformity. William Hay, Esq. who was a Member of Parliament for several years, wrote an ingenious essay on deformity, which was published separately, and is also preserved in Dodsley's Fugitive Pieces, printed in

As it is probable that the form the most likely to please the statuary and painter, from the beauty and symmetry of the shape, is the best calculated to enjoy good health, we shall first give the dimensions, which these artists have fixed upon, as the standards of perfection, previous to any medical or anatomical description of a similar nature.

Artists

---

2 vols. 8vo. *anno* 1765. He himself was deformed, and he defends the shape which nature gave him, by the following observations.

" It is natural to imagine, that if the human frame is warped and disproportioned, it will be lessened in regard to strength and activity, and will be rendered less fit for its different functions, consequently, that deformed persons should not be healthy or long lived. But this is a question best determined by facts, and in this case the instances are too few or unobserved to draw a general conclusion from them. Besides, health is more in a person's own power than is commonly imagined, and is more the reward of temperance, than the effect of constitution. The celebrated Esop certainly was not young when he died, and might have lived longer, had he not been murdered at Delphi. The Duke of Luxemburgh died at 67. The Lord Treasurer Burleigh at 78. Mr Pope's father at 75. On the other hand, there are several instances of deformed persons dying at an early age.

" Experience, and the observations of naturalists will determine, whether deformity, *abstractedly considered*, is prejudicial to health; but in its consequences it is most commonly an advantage. Deformed persons having a less share of strength than others, are more careful to preserve it, and are often more inclined to be temperate, which is a great preservative of health. As deformed persons also, are not formed for violent exercise, they are less liable to such disorders as are the natural consequence of it. They also escape many accidents to which persons of an athletic make, and who glory in their strength, are always exposing themselves, to make trial and give proof of it. Few deformed persons, however, can want strength to perform moderate exercise, which is a great preservative of health."

An intelligent correspondent observes, with respect to the form and growth of the individual, that, if we except the narrow chest, and the habit and appearance of debility which some persons have, particularly when young, he does not think that either of these circumstances denote probable longevity, as he has seen long lived persons of almost all forms, complexions, and habits of body. In general, however, he thinks, that persons of moderately spare habits are longer lived than corpulent persons, yet of these he has known many attain different periods between 70 and 80, which is as long as the generality of persons can expect, or perhaps wish, to protract existence.

Artists commonly divide the height of the body, into ten times the length of the face; they likewise divide each face, or tenth of the body, into three equal parts; the first commences at the springing of the hair on the forehead, and terminates at the root of the nose; the nose is the second division; and the third extends from the nose to the end of the chin. In measuring the rest of the body, they use the term *nose*, or length of the nose, to denote the third of a face, or the thirtieth part of the body. The first face begins at the root of the hair, above the forehead, and extends to the end of the chin; but from the top of the forehead to the crown, there is still a third of a face, or a nose, in height.—Thus, from the top of the head to the end of the chin, there is a face and a third; from the chin to the juncture of the clavicles, or collar bones, two thirds of a face; and, therefore, from the top of the breast to the crown of the head, is twice the length of the face, or the fifth part of the body; from the joining of the clavicles to the under part of the nipples, they reckon one face; from this to the navel, is the fourth face; and the fifth extends from the navel to the division of the inferior extremities, which should complete half the length of the body. Two faces are exhausted between the thigh and knee, to the last of which they allow half a face, being the first half of the eighth face; two faces are assigned between the knee and top of the foot; and from that to the sole, half a face; which completes the ten faces, or length of the body. This division has been made from men of ordinary size; but, in those of a higher stature, they allow about half a face additional, between the nipples and the commencement of the thighs, which, in tall men, is not the middle of the body. When the arms are fully stretched in a horizontal line, the space between the tips of the middle fingers, is equal to the length of the body. From the joining of the collar bones, to the articulation of the shoulder bone with that of the arm, is one face; when the arm hangs down, or is bended forward, it is four faces in length; two between the joint of the shoulder and the elbow, and two between the elbow and the root of the little finger, in all five faces, and an equal number for the other arm, which is precisely the length of the body; about half a face remains for the length of the fingers; but it must be remarked, that half a face is loſt in the joints of the elbows and shoulders, when the arms are extended. The hand is about a face in length, the thumb a third of a face, or a nose; and the longest toe is nearly of the same length with the thumb. The under part of the foot is equal in length to the sixth part of the height of the body.

Such is the standard, according to which we may form an idea of the best proportions of the male human figure; though it may be impossible to find such a degree of symmetry and perfection in any one individual that ever existed*.

Medical men, in the views they give of the form the best calculated for health and longevity, deal more in general description than in such minute details. According to Hufeland†, who has dwelt more fully than any other medical author upon this part of the subject, the following is the portrait of a man destined for longevity.

---

* Buffon, Vol. II. p. 460. 461. The celebrated artists, Bartolozzi and Cipriani, however, gave more grace to their figures, by deviating from these proportions, and giving more length to the body, particularly in females. In regard to females, Felibien in his Entretiens, Vol. II. p. 44. 45. has drawn up a particular description of the beauties of the female form, the substance of which is given in Crito, or a Dialogue on Beauty, by Sir Henry Beaumont. See Dodsley's Fugitive Pieces, in 2 vols. 8vo., printed *anno* 1765.

† Vol. I. p. 231.

He has a proper and well-proportioned stature, without however, being too tall. He is rather of the middle size, and somewhat thick set. His complexion is not too florid; at any rate, too much ruddiness in youth is seldom a sign of longevity. His hair approaches rather to the fair than the black; his skin is strong, but not rough. His head is not too big; he has large veins at the extremities, and his shoulders are rather round than flat. His neck is not too long; his belly does not project; and his hands are large, but not too deeply cleft. His foot is rather thick than long; and his legs are firm and round. He has also a broad arched chest, a strong voice, and the faculty of retaining his breath for a long time without difficulty. In general, there is a complete harmony in all his parts. His senses are good, but not too delicate; his pulse is slow and regular.

His stomach is excellent; his appetite good; and digestion easy. He eats slowly, and has not too much thirst, which is always a sign of rapid self consumption.

In general, he is serene, active, susceptible of joy, love, and hope; but insensible to the impressions of hatred, anger, and avarice. His passions never become too violent or destructive. If he ever gives way to anger, he experiences rather an useful glow of warmth, an artificial and gentle fever, without an overflowing of the gall. He is fond also of employment, particularly calm meditation, and agreeable speculations; is an optimist; a friend to natural affections, and domestic felicity; has no thirst after honours or riches, but is satisfied with his lot.

The sentiments of the celebrated Lord Bacon, upon such a subject, must always be treated with great deference and respect, and it is the more necessary to take notice of them, as he alludes to some particulars, not mentioned by Hufeland. Among other observations regarding this point, he remarks, that a head somewhat less than to the proportion of the body, a moderate neck, wide nostrils, a large mouth, an ear gristly, not fleshy, teeth strong and contiguous, firm flesh, a raw boned body, with veins lying higher than the flesh, betoken long life. He adds, that a broad chest, a large hand, a short and round foot, thighs not fleshy, deep calves of the leg, eyes somewhat large, senses not too quick, the pulse in youth slow, but quicker in old age, facility in holding the breath in youth, the body inclined to be bound, but more laxative in the decline of years, are also signs of long life *.

But it is not from the speculations of artists, of philosophers, or of physicians, that the form the best calculated for health and longevity can alone be described; for the bodies of those who have lived long, having, in various cases, been examined by skilful anatomists, the causes of their long lives, and of their ultimate dissolution, have been thus ascertained, with considerable, though not decisive, accuracy.

The first anatomical account drawn up of the dissection of any old person, is the one given by the celebrated Doctor Harvey, of Thomas Parr, who died (16th November 1638,) at the extraordinary age of 152 years and 9 months †. Notwithstanding

---

* He farther observes, that the fair complexioned are shorter livers than the black or red. That the hairs of the head should be hard, and not soft or delicate; and that hairiness of the upper parts, and on the breast, is a sign of short life; but of the lower parts, as the thighs and legs, of long life.

The celebrated Lavater, (Hunter's Translation, Vol. III. p. 169.) gives the following as the signs, if not the ingredients of long life. An elevated forehead, sunk eyes, a large nose, frontal sinuses raised and spacious, a chin firm and prominent, lips closed, a skin soft and puckered, but not over lax, a character artful, suspicious, covetous, and deceitful; obstinacy and emulation are inseparable from it. Every man, he adds, destined to reach an advanced period of life, has a muscular forehead, furnished with a soft skin, and the nose somewhat curved.

† His grandson, Michael Michaelstone, lived to the great age of 127. See Easton, p. 75. He died an. 1763.

withstanding his great age, yet his body was found very fleshy, his breast hairy and large, his heart was great, thick, fibrous and fat, his viscera were sound and strong, especially the stomach, his brain was entire and firm, all his inward parts appeared so healthy, that, if he had not changed his diet and air, he might perhaps have lived a good while longer. He had such strength of body, that he was able, at the 130th year of his age, to do any husbandman's work, even thrashing of corn; but, coming out of a clear thin and free air, into the thick air of London, and after a constant plain and homely country diet, being taken into a splendid family, that of the Earl of Arundel, where he fed high, and drank plentifully of the best wines, the natural functions of the parts of his body became overcharged, his lungs obstructed, and the habit of the whole body quite disordered, upon which there could not but soon ensue a dissolution *.

There is another account of the dissection of an old man, also preserved in the Philosophical Transactions, which merits observation †.—It is of a worker in the mines in Switzerland, who died in 1723, aged 109 years and three months. Without entering into the anatomical circumstances therein mentioned, it may be sufficient to remark,

that

---

* The whole description is too long to be here inserted, but will be found in the Philosophical Transactions, No 44. p. 886;—also in Lowthrop's Abridgement, Vol. III. p. 306. In Doctor Harvey's account, it is particularly remarked, that the appearance of the *partes generationis* served not a little to confirm the report of his having undergone public censures for incontinency, even at the age of 102, especially seeing that much after that time, namely, when he came to be 120 years of age, he married a widow, who declared, " eum cum ipsa rem habuisse, ut alii mariti solent, " et usque at 120 annos retroactos, solitum cum ea congressum frequentasse."

† Philosophical Transactions, No. 376.—See also Mead's Works, p. 349.

that many important parts of the body, which ought to have been soft, were found in a hard state, in many cases bony and cartilaginous, and, in some particular places, quite ossified ; plainly proving, that the dissolution of the human frame, is owing to the soft parts becoming hard, and even bony, and, consequently, incapable of performing their proper functions.

A third, and most satisfactory account of the dissection of a person distinguished for old age, is the one given by Doctor James Keill, of John Bayles, a buttonmaker, who died at Northampton, *anno* 1706, in the 130th year of his age. This account is accompanied with some judicious reflections on the constitutional requisites for longevity.

Dr Keill observes, that the weakness of his stomach, and the hardness of the aorta or the great artery of the body, were the principal causes of his death. The coats of the stomach were so thin, (hardly thicker than thin writing paper), that they were incapable of performing its usual functions, and consequently his digestion must have been spoiled. He had not tasted meat for some years; and had latterly lived solely on small beer, bread and butter, and sugar. But had his digestion been better, that would have been of little avail, for it was impossible that his blood could circulate duly, while the great artery, having become cartilaginous, gristly, or hard, had lost its elasticity. Nor is this all. His whole flesh and skin felt hard ; and his brain was so firm and solid, that, in cutting, it hardly moistened the sides of the knife. It was highly probable, that the same disposition prevailed throughout the whole body. Indeed, whoever considers how soft a substance an animal body is, at its first beginning, and how, from time to time, it acquires firmness and solidity, will easily be induced to believe, that old age brings on a more than ordinary hardness to all the fibres and vessels.

The fibres and vessels of old people becoming thus hard and contracted, the necessary consequence is, a diminution of their secretions; their skin is always dry, and their perspiration very little *. The fullness of the vessels, and the frequent rheums and catarrhs of old people, evince the effects of the closeness of the coats of the vessels; and, indeed, when the fibres of the arteries become indurated, instead of assisting, they obstruct the heart in circulating the blood.

From the anatomical examination of Parr and Bayles, there are two particulars which seem to be essentially necessary for the preservation of long life. A due conformation of all the vital parts is certainly most desirable; but a sound heart, and good lungs, are absolutely essential, without which length of days cannot be expected. The heart, in particular, must be strong and fibrous, for, as it is left alone to force the circulation of a large quantity of sluggish blood, great strength is absolutely requisite to propel the blood through the inactive vessels, to the extremities of the body, and back again, which may be more easily done by men of a low stature, such as old Bayles was. The goodness of the lungs, and a large chest, are also essential requisites, in consequence of which the air has its full effect upon every particle of the blood. Every other means should likewise be thought of, which might render the blood better calculated to be easily moved through the contracted channels of an old body.

Dr Keill justly remarks, that the dissections of old persons

---

* They are likewise generally bound. Old Bayles went to stool but once in the ten or twelve days, for some years before he died. From this circumstance, and from the great quantity of blood which Bayles had, it is probable that he would have lived longer, with the assistance of opening medicines, which would have diminished the quantity of his blood; or even by gentle and moderate bleedings.

sons are not yet sufficiently numerous, to ground any positive opinion regarding the effects of age, and the causes of the death of old men[*]; but that it certainly is a judicious system to follow, to endeavour to preserve such a softness in all the fibres, that they may easily yield to the pressure of the blood, and, by their elasticity, restore themselves to their former state, and thus to enable the body to perform all its proper functions.

Having discussed these anatomical inquiries, we shall now proceed to consider two points, connected with this branch of the subject, which still require more particular attention, namely, height and corpulency.

As to the first, Lord Bacon remarks, that tallness of stature, if it be not immoderate, with a convenient form or making, and not too slender, especially if the body be active withal, is a sign of long life. On the contrary, men of low stature, live long, if they be not too active and stirring[†].

The middle sized, in our opinion, however, are more likely to live long than either the tall or short. The tall are too apt to get a habit of stooping, which injures the organs of respiration, and hastens their dissolution[‡]: The short are too apt to become fat: Whereas the middle sized can easily keep themselves erect, and are not generally disposed to corpulency.

---

[*] This necessary information, on this head, might be obtained by dissecting the bodies of such old men as die at any public hospital, in particular those of Chelsea, Greenwich, and Kilmainham.

[†] To be long, and slow in growing, he adds, is a sign of long life; if to a greater stature, a greater sign; if to a lesser stature, yet a sign; though contrarily, to grow quickly, to a great stature, is an evil sign; if to a small stature, the less evil.

[‡] It has been suggested, that old people should wear stays to keep themselves erect, as the bending of their bodies is so injurious to them.

In regard to leanness on the one hand, or corpulency on the other, Lord Bacon makes the following distinction. To be lean, with a settled temper, denotes long life; and length of life may also be expected, from a more fat habit of body, joined with choler, and a disposition stirring and peremptory.

6. Sex.

It has been much disputed, whether individuals of the male or of the female sex live the longest. If women are most exposed to domestic disease, men are most liable to suffer from the dangers of war, the risks of commerce, the fury of the elements, and other external injuries; and also, are more addicted to those irregularities and excesses which shorten life. On the other, it is to be observed, as a circumstance adverse to the longevity of females, particularly in high life, that it is more fashionable to be delicate than robust: whereas, if good health were considered to be an accomplishment, and as necessary for a woman as any showy acquirement, the case would soon be altered *. In discussing this point, we shall first state what philosophers say regarding it, and shall then ascertain how far their doctrines are verified by facts.

The bodies of males in general, though not without some exceptions, are stronger, larger, and more active, than those of the females. In the human species, in particular, the male is commonly not only larger than the female, but his muscular fibres are firmer, and more compact, and his whole frame indicates a superior strength, and robustness of texture †. But as in women, the bones, the cartilages, the muscles,

---

* See this subject ingeniously discussed in the Manual of Health, p. 17. and 18.

† See Smellie's Philosophy of Natural History, Vol. I. p. 236. This very circumstance, however, is against the male at his birth; for the largeness

cles, and every other part of the body, are softer, and less solid than those of men, they must require more time in hardening to that degree which occasions death; neither are they generally so much subjected, as men, to bodily exertions *. Women, of course, ought to live longer than men; nay, it is said, that those men who have a weakly appearance, and who, in point of constitution, approach the nearest to women, often live longer than those who are more robust †.

This doctrine is fully confirmed by experience; for, by consulting the bills of mortality, it appears, that not only after they have passed a certain age, but even from their birth, the probability of long life is greater in women than in men.

Some authors have laid it down as a general rule, or fact, that the mortality of males is greater than the mortality of females ‡; and that this is the case, not only when they have grown up, but even among children, in so much, that the proportion, in favour of females, is as 39 is to 30. Indeed it appears, from a most authentic document, namely, the

---

ness of his size, and in particular of his head, makes him more apt to suffer. Hence, there are more males still-born than females. Hippocrates says, that females are later in forming and growing in the womb than the males; but, when they are born, they grow faster, have their understanding earlier, and are sooner old, on account of the weakness of their bodies and their manner of living. Lynch on Health, p. 8.

* Exercise, if it be too much (says Lord Bacon), is no friend to prolongation of life; which is one cause why women live longer than men, because they stir less. See Extracts from Bacon. Code of Longevity, Vol. IV. p. 289.

† See Buffon, Vol. II. p. 477, and Smellie's Philosophy of Natural History, Vol. I. p. 509.

‡ Observations on Reversionary Payments, 5th edit. anno 1792, Vol. I. p. 8, and 126.

the Tables of Assignable Annuities for Lives in Holland, which had been kept there for 125 years, wherein the ages, and the sex, of the persons dying, are truly entered, that a given number of females have, in all accidents of age, lived above three or four years longer than the same number of males *.

The greater mortality of the male sex, is so fully proved, on most unquestionable authority, in the course of Dr Price's observations, that he conceives, the reason why more males are born than females †, is this, That there is some particular weakness or delicacy in the constitution of males, which makes them more subject to mortality, and which consequently renders it necessary that more of them should be produced, in order to preserve in the world a due proportion between the two sexes ‡. But this can hardly be admitted. The female is certainly a finer machine than the male, and formed with much more art and contrivance, but it does not equal the male in strength; and the greater mortality of the males, even in their youth, may be attributed to their being more exposed than the other sex to dangers and hardships, and to the inclemency of the seasons, from the time that they are able to go about by themselves.

Dr Price himself seems to concur in this idea, as, in another part of his work, he questions whether this difference, so unfavourable to males, is *natural;* and, after stating some facts, to corroborate his doubts, he infers from thence, that human life, in males, is more brittle than in females, only in consequence of adventitious causes, or of some particular debility, that takes place in polished and luxurious societies, and especially in great towns *.

---

* Philosophical Transactions abridged, Vol. IX. p. 326.

† Derham, in his Physico-Theology, p. 175, has stated the proportion of male to female births, as 10 to 13, but Dr Price proves that it should be as 20 to 19. Reversionary Payments, Vol. II. p. 366.

‡ Ditto, Vol. I. p. 368, and Vol. II. p. 367.

It may be proper also to mention, that, according to the most authentic information, not only women live longer than men, but that married women live longer than single, in the proportion, according to some registers, of no less than two to one: a difference so great, that it must have been, in some degree, accidental †.

In regard to the greater mortality of males, after they have reached the age of sixty, that has never been disputed and is accounted for by the greater softness of the female organs, which retards that hardness which is generally supposed to be the principal cause of death from old age ‡.

Advantages of Bills of Mortality.

The doubts, however, which still remain, regarding some particulars connected with this branch of the inquiry, point out the advantages that might be derived were proper parish registers kept, and bills of mortality formed, for the whole kingdom, under legislative authority, and not in the careless manner practised at present. If this plan were adopted, and properly enforced, it would give the precise law, according to which human life wastes, in all its different stages; and thus supply the necessary data for computing accurately the values of all life-annuities and reversions. It would, likewise, shew the different degrees of healthfulness of different situations, mark the progress of population from year to year, keep always in view the number of people in the kingdom, and, in many other respects, furnish instruction of the greatest importance to the state*.

---

* Price on Reversionary Payments, Vol. II. p. 269, and 270.

† Ditto, Vol. I. p. 364. Vol. II. p. 196, 197, and 268.

‡ Hufeland, Vol. I. p. 168. remarks, that, though more women become old than men, yet that men only attain to the utmost extent of longevity. The equilibrium and pliability of the female body, seem, for a certain time, to give it more durability, and to render it less susceptible of injury from destructive

7. RENOVATION OF THE DISTINCTIONS OF YOUTH †.

AMONG the various circumstances which distinguish youth from old age, three of the most remarkable are, the colour of the hair, the possession of teeth, and the clearness of vision. It is singular, that many instances are to be met with, where, after old people have experienced a failing with respect to these particulars, nature has in a manner made a fresh effort to renew the distinctions of youth.

We shall proceed to give instances, where a renovation has taken place, in regard to each.

The Hair.

The colour of the hair varies much in different men, during their youth; but, when they get old, it almost uniformly becomes first grey, and afterwards white. This does

---

destructive influences. But in all, strength is without doubt necessary to arrive at a very great age. More women, therefore, become old, and fewer very old.

* Price on Reversionary Payments, Vol. I. p. 281.

† On the whole, it appeared better to include this article in the First Chapter, as being connected with the person of the individual.

does not happen at the same age, in every case: for some are grey as early as twenty or twenty-five, while others have only a few grey hairs at fifty, or even sixty years of age.

It can hardly be doubted, that dryness, or want of moisture, is a principal cause of grey hairs; and, consequently, that the custom of wearing hair-powder must bring them on sooner than otherwise would be the case. There is reason, therefore, to believe, that keeping the roots of the hair well moistened with oily or fat substances, is the best means of keeping back, what so many are inclined to consider as a defect, but which, at the same time, is not inconsistent with the possession of good health, or the attainment of longevity.

But the singular circumstance is this, that after an individual has got grey hairs, he suddenly or accidently loses them; and, in their stead, hair of a different colour makes its appearance. Of this, the following examples may be cited.

It is recorded, in the Transactions of the Royal Society*, on the evidence of Dr Slare, that his grandfather, whose hair, about the eightieth year of his age, had become white, grew much darker afterwards.

It is also reported of one Mazarella, who died at Vienna, in the 105th year of his age, that, a few months before his death, he had not only several new teeth, but that his hair, grown grey by age, became black, its original colour †.

A similar circumstance is mentioned of Susan Edmonds, of Winterbourn, Hants, who died at the age of 104; and who, five years before her death, had new hair, of a fine brown colour, which began to turn grey a few months before her death [*].

---

* Vol. xxviii.

† Easton on Human Longevity, p. 147.

It is also said, that John Weeks, of New London, in Connecticut, who died at the age of 114 years, lost his grey hairs, which were renewed by hair of a dark colour [†].

The Teeth.

There is no particular, in respect of which former generations seem to have enjoyed a greater superiority over the present, than with regard to the duration of their teeth. A place of interment was lately opened at Scone, near Perth, in Scotland, which had remained untouched for above 200 years, and yet, to the astonishment of every one, among a great number of skeletons, which were there discovered, there was hardly any of them whose teeth were not entire and sound [‡]. This must be ascribed to greater simplicity of diet, to the teeth being less injured by fumes from a disordered stomach, to the custom of drinking hot liquors being then unusual, and perhaps to the absence of scorbutic complaints.

The means of preserving the teeth will be the subject of future discussion. On the present occasion it is only necessary to observe, that many examples may be quoted, where persons, having lost their teeth a second time, have got a third set of teeth, in some cases partly, in others wholly, supplying the places of those they have lost. This circumstance merits to be particularly attended to, for, as Bacon has well observed, new teeth put forth in our older years, betoken long life.

---

[*] Easton on Human Longevity, p. 168. [†] Ditto, p. 286.

[‡] This curious circumstance has been certified to me, in a letter from the Rev. Mr Aitken, minister of Scone, near Perth.

One of the first instances of this circumstance, at all authentically recorded, is the case of the old Countess of Desmond, which was accounted to be so remarkable, that many considered it to be a fable. Lord Bacon himself, seems to consider it as doubtful. He says, "*They tell a tale* of the "old Countess of Desmond, that she did twice or thrice "cast her old teeth, and that others came in their room*." But the fact is sufficiently authenticated, for one of such great antiquity, and is corroborated by many other instances.

In the Philosophical Transactions †, it is affirmed by Dr Slare, that his grandfather, who was a native of Bedfordshire, had all his teeth strong and firm at the age of 80, and that, within five years afterwards, *he had a new set.* He adds, that he remained in good health and strength to the 100th year of his age, and even then died in consequence of fullness of blood. These singular events, the Doctor attributes to the frequent use of sugar; of which his relation was a great eater.

It is singular that the teeth should, in this particular instance, be preserved so long, notwithstanding the use of sugar, since the ruin of the teeth is so often attributed to that article ‡.

In the Philosophical Transactions also, two other instances are mentioned, one of Joseph Shute a clergyman, who got a new tooth when he was 81 years of age; and another, Mariah Start, who got two new teeth at 75 years of age §.

---

* Bacon's Works, Vol. III. p. 152.

† Vol. xxviii.

‡ The negroes have fine teeth, though they use much sugar.

§ Lowthrops' Abridgement, Vol. III. p. 297.

In the return I have received of the old people from Greenwich Hospital, mention is made of one, (John Moore, a native of Ireland, the oldest man in the house,) who said, that he had four new fore-teeth, within five years preceding the return, one of which he had accidentally lost *.

I myself have seen one James Donald, an old man now living, who had got new teeth, which I had an opportunity personally of examining. They appeared to be of a much softer consistence than teeth usually are, and not fit to do the same service; and, on the whole, they can only be considered as an imperfect substitute.

It is said by anatomists, that the foundation of three sets of teeth may frequently be traced in the jaw of man. But, if that is often the case, it is surprising that instances are not more frequent of such teeth being obtained.

The Sight.

There is also reason to believe, that after the sight has been lost, seemingly by a decay of nature, it has again returned, not perhaps in its former perfection, but so as to be of great use.

One of the most singular instances of the sight being renewed, is in the case of Machell Vivan, a native of Scotland, but who was settled as a clergyman in Northumberland, and lived beyond 110 years of age. A particular account of him is given by a person entitled to credit, who saw him personally, in the year 1657, and who declares, that his hair had become like a child's, rather flaxen; that he had three new teeth, which he, however, got with difficulty; and though, about forty years preceding that period, he could not read the largest print without spectacles, yet, that his sight was renewed, so that no print or writing was so small that he could not read it without them. He had five children after he was eighty years of age *.

---

* In Easton on Longevity, there are many instances quoted of a renewal of teeth, as that of Philip Laroque, p. 104. Marion Gibson, p. 225. &c. &c. There is also a remarkable instance of one in Hufeland, Vol. I. p. 171.

I am assured, from respectable authority, that the following circumstance may also be depended upon. A lady in the county of Fife, North Britain, who died at the age of 89, after having been under the necessity of using spectacles for several years, recovered her sight, so that for some time before she died, she could read very small print, and sew linen without glasses.

Dr Rush also mentions an old man, (Adam Riffle of Pensylvania), who, about the 68th year of his age, gradually lost his sight, and continued entirely blind for the space of twelve years, at the end of which period, his sight returned, without making use of any means for the purpose, and without any visible change in the appearance of the eyes. It is singular, that after recovering his sight, he saw as well as ever he did. During both the gradual loss, and recovery of his sight, he was noways affected by sickness, but, on the contrary, enjoyed his usual health †.

Several other instances of a similar nature might be quoted ‡, but these are sufficient to establish the general principle,

---

[*] See Fuller's Worthies of England, Fol. Edit. 1662, County of Northumberland, p. 309.

[†] Medical Inquiries and Observations, by Benjamin Rush, M. D. printed at Philadelphia, anno 1793, p. 312.

[‡] See Easton on Longevity, account of Thomas Edgar, p. 195; and Janet Allan, p. 215. An intelligent physician informs me, that he knew an old lady of above 70, who had used spectacles at 50, and about 70 could sew fine work without them. She had cartilaginous substances on the

principle, that aged people may have this distinction of youth renewed.

It is singular, that no particular instance has occurred, of the sense of hearing being renewed, after being lost by a decay of nature, or the effects of old age. It is to be observed, however, that the human race are not so apt to lose their hearing as their sight. In the return from Greenwich Hospital of 96 old men beyond 80, the organ of vision was impaired in about one-half, whereas the organ of hearing only to the extent of about a fifth. But this circumstance can easily be accounted for, as the eye is certainly a more delicate organ than the ear, and more liable to a variety of accidents.

CONCLUSION.

Dr Rush conjectures*, that the antedeluvian age was attained, by the frequent renovation of different parts of the body; and it evidently appears, from the facts above narrated, that such a circumstance was not impossible. At the same time, other reasons may be assigned, (which will afterwards be stated †,) for the great age of the patriarchs †.

Friar Bacon, in his work entitled, "*De retardandis senectutis malis*," has given us a number of observations regarding what he calls the accidents of old age, as greyness of hair, wrinkles, &c.; nay, he proceeds so far, as to point

out

---

the gums, which appeared to her as new teeth. When these changes took place, she had a regular monthly discharge of blood from an issue, somewhere about the knee. She was so entirely *renovated* as to walk miles.

* On Old Age, p. 312.

† See Conclusion of this Part.

out medicines which will preserve youth, and cause grey hairs to fall, and black or youthful ones to come in their room. This work, though curious, and therefore meriting to be preserved [*], is unfortunately mingled with much of that mystery, so usual in medical works at the period when it was written.

Lord Bacon has paid particular attention to the subject of the teeth, and the renewal of them. The points to be considered regarding them, he observes, are,—1. The preserving of them.—2. The keeping of them white.—3. The drawing of them with least pain.—4. The staying and easing of the tooth-ach.—5. The binding in of artificial teeth;—and, 6. That great one, *of restoring teeth in age*, which, he says, may be thought of, and would be, indeed, *magnale naturæ* [†]. But though nature occasionally indulges itself in such renovations, it is hardly possible to believe, that it could be compelled to it, by any means in the power of man to apply; and, indeed, if proper care were paid to the preservation of the teeth, commencing at an early age, it would rarely be necessary.

---

[*] It is reprinted in the Code of Longevity, Vol. III.

[†] Bacon's Works, Folio Edition, Vol. III. p. 151.

CHAP. II.

CIRCUMSTANCES CONNECTED WITH *THE MIND* OF THE INDIVIDUAL, FAVOURABLE OR PREJUDICIAL TO HEALTH AND LONGEVITY.

AMONG the various systems which have had their day in physic, and which farther investigation, and more accurate inquiries, have overturned, there are two, so immediately connected with the subject of this chapter, that it is necessary to advert to them; the one was formed by Stahl, and the other by Hoffman, both able men and eminent physicians.

According to the doctrines of Stahl, the primary cause of all the disorders in the human body, *proceeds from the mind*, and consequently the mind, being differently affected, produces different diseases. Experience, we are told, demonstrates, that when the mind, which animates the most robust and best organized body, is violently affected, either by sudden sensations, or by such as are long and painful, the body thereby manifestly suffers *. Thus, sudden fright, terror, rage, corroding grief, envy, vehement desire, and every other passion, occasion disorders, sometimes suddenly, and sometimes slowly, such as apoplexy, palsy, madness, fevers, hysterics, and a variety of other diseases. It evidently appears, that, in these cases, it is the mind which has affected the body and occasioned its derangement.

Hoffman, and his disciples, on the other hand, believe, that the primitive cause of all disorders lies, *in the structure of the body*, and the mechanism of its organs. They contend, that when a noble and essential part of the body is destroyed, or greatly injured, death ensues; and that any disorder, in any of the essential parts of the body, causes not only a disease of the body, but frequently of the mind also, in proportion as the part affected is more or less intimately connected with the faculty of thinking. They assert, that intense cold, for instance, may occasion a fever, as well as a sudden and violent fright; and that a stroke with a mallet, upon the head of a man, is sufficient to disorder the most rational, acute, and vigorous mind. Hence, it is evident, they affirm, that the diseases both of the body and of the mind, are visibly occasioned by the disorders of the body [*].

---

* "Of the power of mind, over body, (says an intelligent correspon-
" dent) I have seen some striking instances, and can safely affirm,
" that mental agitation is a strong predisposing cause of disease. I lost
" two friends some years ago in fevers, the origin and progress of whose
" complaints I knew and carefully watched. One was a physician of
" a very strong and robust habit of body, but whose mind having been
" dreadfully agitated by a particular vexation, he caught a low typhus
" fever in visiting a poor patient, and sunk under it. The other was a
" gentleman of great delicacy of sentiment, and who was cruelly ha-
" rassed by the brutal behaviour of a partner in business. He took a
" typhus, though no cause of infection could be traced, and fell a
" victim to it. I am satisfied that the actual cause of the death of both
" was mental agitation."

Whoever considers this subject dispassionately will probably be of opinion, that, to a certain extent, both these systems are right; and that the only error is, in restricting the sources of human maladies, either to the mind, or to the body, when either may occasion various disorders, and sometimes both are so complicated and blended together, that it is impossible to say, which was the actual parent of the disease.

As it will hardly now be disputed, that the mind causes many of those disorders with which the body is afflicted, it is proper to consider, what circumstances, whether connected with the powers or faculties of the mind, or with the motives or passions by which it is influenced, are calculated for the preservation of the health or may occasion disease.

1. Powers of the Mind.

The body of man, it is well known, requires constant reparation, and its strength is exhausted, not only by the actions of the person, but also by the exercise of its mental powers. In proof of the latter position, let any person try the effect of intense thinking for twelve hours, and he will soon find how much his body is thereby fatigued, though he should never stir from the chair he sat on. It is necessary, therefore, with a view to the preservation of health, to be as careful and moderate in exercising the mind as the body; for, as the poet of health has well remarked,

---

[*] See Beilfield's Elements of Universal Erudition, translated by Hooper, Vol. I. p. 123. Also Philosophy of Medicine, Vol. I. p. 48.

> "'Tis the great art of life, to manage well
> "The restless mind *."

It may also be proper to observe, that the gradual improvement of the mind, is as essential for health, as the gradual growth of the person; and, indeed, there is hardly an instance, where the faculties of the mind have soon reached maturity, that they have been accompanied with long life.

Nor do those who possess the powers of the mind, in their utmost perfection, attain great age †. Their talents, the envy they encounter, and the disappointments they generally meet with in their expectations of receiving the utmost attention and respect, (which the world is seldom disposed to pay them, at least while they remain in life,) keep

---

* Armstrong's Art of Preserving Health, Book IV. line 84.

† That superiority of intellect, to which the appellation of *genius* may be given, is rarely to be met with, though there are some instances of it, even in our own times. The man of genius sees things as if it were intuitively; and acquires, without difficulty, what costs others much labour; a person of genius has such a capacity or command of mind, that he can carry on two, or even three mental operations at the same time. For instance, I have seen a youth of fourteen years of age, write when dictated to, and in the intervals of dictation, carry on, from time to time, a distinct composition on a different subject. This could not be effected by any whose mind did not possess unusual powers; but such efforts, though done apparently with ease, must ultimately be exhausting. Some have contended, that what is called *talent*, ought to be accounted *a disease*, not being natural to the human race to any extent. Those who are distinguished by the elegance of their shape, or the beauty of their persons, are very rarely celebrated for talent. When the form is complete, the head ought to be small; but men of talents have their heads disproportionably and unnaturally large. Men of talents are in general very irritable, which must be owing to some defects in their nervous system. Above all, it is well known that talents and insanity are nearly allied, and that many able men are more than half mad. Hence, it would appear that great talents are owing, either to some defect in the shape, or some disease in the mind; and perhaps it is fortunate for society that there are not more examples of them, than is usually the case.

keep them in a perpetual state of irritation and disquiet, which hurries them prematurely to the grave. Among the long list of persons who, since the commencement of the Christian era, have lived about a century, there is but one individual, (Fontenelle), at all distinguished for his intellectual powers, (and he did not reach quite 100 years,) whilst there are above 1700 others, remarkable for little else but for the duration of their lives, and the number of years they witnessed.

The talents naturally calculated for long life are, indeed, more of a solid than of a brilliant cast. If the mind is of too restless and ardent a nature, it must necessarily be worn out. The experience of any individual may satisfy him, how much the mind may be affected by too intense application, during the short space of a single day, and consequently, how much more it must feel from a continual repetition of the same effort, for any considerable space of time. The mind, therefore, naturally inclined to moderation in its exertions, is the most likely to preserve the body in good health; not ambitious to acquire too many ideas, or too much information, but desirous of making a proper use of the knowledge it has obtained. In short, a man possessed of sound sense, rather than of brilliant talent, is the one most likely to attain longevity, or he who enjoys the *mens sana, in corpore sano*[*].

One reason why men of great talents live for a shorter time than those who do not rival them in that respect, is, that they are generally formed with more delicacy of frame. Brilliant faculties are seldom accompanied with great strength of body. A strong clumsy man is almost proverbially heavy and stupid. There are some instances to the contrary, as David Hume, Samuel Johnson, and Charles

James

---

[*] Juvenal, Satire x. l. 356.

James Fox; but by far the greatest proportion of men, distinguished by their talents, are of puny, irritable frames, and, consequently, not so likely to live long, as their more robust, but duller, brethren.

2. THE PASSIONS.

THE instances, however, of those who impair their health by a severe exercise of their mental powers, are rare, compared to those who destroy it by the violence of their passions; which, when they become vehement and immoderate, may be justly ranked among the diseases themselves, because they disorder the body in various ways; and, in the words of the poet,

The most important health,
That of the mind, destroy[*].

To explain, at full length, this branch of the subject, would require a volume. Some of the principal particulars connected with it, is all that can be taken notice of in a work of this nature.

It is certain, that the passions were given for wise and useful purposes; but they must be kept under the strictest and most complete subjection. If uncontrolled, and left to themselves, they affect us, as a tempest does the ocean, without being able to counteract their pernicious influence[†]. Fortunately, they may be regulated by education, by early restraint, or by unwearied personal attention, founded on the full conviction of its necessity. At the same time, each individual has a natural disposition, or turn of mind, born with him. The passions do not act with equal force on all. Their effects vary according to the diversity of constitutions, both of mind and of body; and, even in the same individual, differ at different times *. Happy is the man, however, whose temper is naturally good, or the violence of which can easily be corrected.

---

[*] Mead's Works, p. 145, and Armstrong, Book IV. l. 135.

[†] Willich's Lectures on Diet and Regimen, p. 578.

Sometimes men subdue an untoward disposition, finding it necessary for their success in life; for enabling them to live comfortably in society; for preventing quarrels, and their consequences; from the strictness of martial discipline, and other causes; who, after they get old, and fall into a valetudinary or diseased state, lose their good humour, forget their calmness of temper, and become fretful and irascible. This should be checked, if possible, at the commencement; for, by the indulgence of any unruly passion, the disorders of old age are greatly aggravated; and they will find, too late, that to retain, when once acquired, a dominion over our passions and affections, is an essential and indispensable requisite to health †.

It has often been remarked, that persons destitute of ambition and avarice, are peculiarly likely to enjoy long life:

> Free from those anxious cares, which oft perplex
> The wily statesman, or the miser vex;

they feel no regret for the past, nor anxiety about the future. Enjoying that tranquillity of soul, on which the happiness of our early years so much depend, they are strangers to those torments of the mind, which usually accompany

---

* Mead's Works, p. 426.

† Willich's Lectures, p. 579.

company more advanced years, and by which the body is wasted and consumed*.

Modern times, also, it is justly observed, are distinguished by a spirit of restless enterprize, and propensity to new undertakings, which deprives many of the most valuable part of their life. The great increase of luxury, by still multiplying its wants, makes new schemes, and new exertions of the faculties, always more necessary. Hence arises that endless uneasiness, which destroys all sensations of internal tranquillity and contentment, and which never suffers men to enjoy that degree of peace and relaxation, so indispensably requisite for the preservation and the restoration of health†.

It is necessary to observe, at the same time, that, in several instances, a certain activity of mind has accompanied longevity. Lord Bacon remarks, that the milder sort of creatures, as the sheep and the dove, are not long-lived; and that choler is as the whetstone and spur to many functions in the body. He admits, that to be lean, with a settled temper, denotes long life; but then he contends, (as has been already remarked,) that persons, who have a more fat habit of body, cannot expect long life, unless it is joined with choler, and a disposition stirring and peremptory*.

---

* A friend, with whom I have corresponded on the subject of longevity, expresses his firm belief, that an anxious state of mind brings many to their end, long before their natural term, or what might be expected, from the original structure of their bodily frame. Whether their anxiety arises from alarms regarding the state of public affairs, or from distress in consequence of the pressure of domestic expenditure, their nerves become relaxed and unstrung, and the due circulation of the sources of life are deranged. Hence arise distraction of the senses, and ultimately the destruction of the body, by palsy, dropsy in the chest, bilious redundance, and various other ways. If these doctrines are well founded, the divine ought to be sent for in many cases, where it is in vain to have recourse to the physician. The best means to preserve health, therefore, is to prevent the maladies of the mind; and the best receipt for that purpose is, to settle a regular, and if possible, a daily account with God and man.

† Hufeland, Vol. II. p. 53.

Medical authors have frequently inculcated, and certainly with reason, that, by the due regulation of the passions, many fatal disorders might be prevented, and that a large proportion of the diseases to which we are prone, originate from the influence of the passions on the human system†.

Every day's experience points out how frequently giving way to passion occasions the most dreadful disorders. Anger, carried to an extreme, often terminates in fury and madness; grief, anxiety, and despair, occasion melancholy, and all its baneful consequences. To give way to passion, therefore, is *to strike the colours* to disease, and to surrender to an implacable enemy, who sinks and destroys the unfortunate victims who submit to his mercy.

There is no emotion of the mind which, with a view to health, it is so necessary to subdue, as that of *fear*. It has justly been called a base passion, *and beneath the dignity of man*. It robs him of power, reflection, resolution, judgment, and, in short, of all that pre-eminence which the human mind ought to enjoy. To be terrified, therefore, for the effects of thunder, or the appearance of spirits in the night, or similar chimeras, cannot be too strongly reprobated.

---

* An intelligent correspondent remarks, on the subject of temper and corpulency, that sweetness of disposition must certainly contribute to the protraction of existence, as it undoubtedly does to its enjoyment; yet, that he has known instances of fretful and ill-tempered persons living a long time, in particular, a connexion of his own, who died between 80 and 90, after having survived the loss of her sight, and having had, for more than 30 years, a paralytic shake of the head. A more fretful or malignant temper hardly ever existed. She was never satisfied with any thing. She had, besides, a certain circumstance on her conscience, which must have made her continually uneasy, and which she was labouring in vain to conceal from her husband and the world. She was fat, and probably nothing but her temper kept her so long alive.

† See Dr Lettsom's address in the introduction to Dr Falconer's Dissertation on the Influence of the Passions on the Disorders of the Body, 3d edit. introduction, p. 17.

Fear also has great influence both in occasioning and in aggravating diseases. By depressing the spirits, it not only disposes us to disease, but often renders those diseases fatal, which an undaunted mind would overcome. Indeed, the constant dread of some future evil, by dwelling upon the mind, often occasions the very mischief which was so much apprehended *. Timorous persons, also, are more readily infected by epidemical disorders than those possessed of true courage; because fear not only weakens the energy of the heart, but, at the same time, increases the susceptibility of receiving contagion. It increases the malignity of diseases, changes their natural course, aggravates them by a thousand incidental circumstances, so that they resist all remedies; and the efforts of nature being suppressed, nothing but a speedy dissolution can be looked for †. This is a point which cannot be too much inculcated; for experience sufficiently demonstrates, that many perish from despondency, who, if they had preserved their spirit and vigour of mind, might have survived many years.

Among the various disorders which originate from the influence of the mind, that which is denominated *the Swiss malady*, so usual among the natives of mountainous districts ‡, is the most remarkable. It is occasioned by a desire of revisiting their own country; and of witnessing again the scenes of their youth, to which the natives of other mountainous countries, but particularly those of Switzerland, are so much attached. This disorder is said to begin with melancholy, sadness, love of solitude, silence, loss of appetite, bodily weakness, and a hectic fever in the evening, which is frequently accompanied with livid or purple spots upon the body. When the disorder is violent, nothing avails but returning to their own country, the very preparations for which is attended with immediate relief *.

---

* Buchan's Domestic Medicine, p. 108.

† Lectures on Diet and Regimen, p. 593.

‡ Many instances of it occur in the natives of the Highlands of Scotland.

It is the more necessary to attend to the effects of the passions upon the health of man, as there is reason to believe, that any disorder arising from any vehement agitation of the mind is more stubborn than that which is occasioned by violent corporeal exercise; because the latter is cured by rest and sleep, which have but little influence on the former †.

Nor ought it to be omitted, what Bacon remarks, that any agitation of mind, prevents the benefits which we ought naturally to derive both from food and rest. He, therefore, very properly recommends, that if any violent passion should chance to surprise us, either when we sit down to our meals, or compose ourselves to sleep, to defer eating, or going to bed, until it subsides, and the mind recovers its former tranquility.

The

---

* See Falconer's Dissertation on the Influence of the Passions, &c. p. 155.

† M'Kenzie on Health, p. 390. It is remarked also by M'Kenzie, in the same place, that the perspiration is larger from any vehement passion of the mind, when the body is quiet, than from the strongest bodily exercise when the mind is composed. Those, therefore, who are prone to anger, cannot bear much exercise, because the exuberant perspiration of both would exhaust and waste the body. Hence passion, by preventing our taking necessary exercise, deprives us of the means even of recovering our health.

The passions, as Hufeland justly observes *, have a tendency to exhaust the finest of the vital powers, to destroy, in particular, digestion and assimilation, to weaken the vigour of the heart, and, by these means, to impede the important business of restoration.

CONCLUSION.

If such are the effects of yielding to the impulses of our passions, what can be more desirable, for the health and happiness of man, than to keep those sources of disease and misery under due subjection. By this is meant, not a stoical indifference, which would prevent our enjoying so many of the pleasures of life, but such a due regulation of the emotions of the mind, as would enable us to enjoy its comforts, without being either gradually trained on, or forcibly compelled to, the performance of actions, which may, in so many various respects, be prejudicial to us. A mind possessed of spirit and fortitude, and not apt to sink under those disappointments to which all, but particularly the aged, are necessarily subjected, is a blessing which cannot be too highly appreciated. Whereas, the unfortunate being, who is subdued by fear, rage, despair, or any other violent passion, can neither enjoy health, nor feel any pleasure in his existence.

CHAP.

---

* Vol. II. p. 51.

CHAP. III.

CIRCUMSTANCES FAVOURABLE TO HEALTH AND LONGEVITY, CONNECTED WITH THE PLACE WHERE AN INDIVIDUAL RESIDES.

There is no being, it is certain, that can so easily accommodate himself to a residence in different countries, or on whom the vicissitudes of climates seem to have less influence, than man. For this, he undoubtedly possesses many peculiar advantages. He can be maintained by a greater variety of food than any other creature; he can alter his clothing according to the climate where he resides; and he can erect habitations, suited, in regard to warmth, to the different circumstances in which he may be placed. But though man can exist in all climates, yet, it is evident, that some situations must be better calculated for him than others, and, consequently, in them he must enjoy a greater proportion of health, and a greater extent of longevity.

The healthiness of a place, calculated for the residence of any individual, may be considered in the following respects: Whether it is, 1. in a hot, a cold, or a temperate climate; 2. Whether in a high or in a low situation; 3. Whether it has a southern or other exposure; 4. Whether on the sea-shore, on the banks of a lake or a river, or at a distance from water; 5. Whether in the neighbourhood of woods or otherwise; 6. Whether in a dry, a clayey, or a marshy, soil; 7. Whether with an abundance or a scarcity of fuel; 8. Whether in a wet or dry atmosphere; 9. Whether on a continent, in a large island, or in a small one; and, 10. Whether in a town, a village, or in the country.

1. NATURE OF THE CLIMATE.

A CLIMATE, in geography, signifies a portion of the earth between two circles, parallel to the equator, and where there is half an hour's difference in the longest day of summer. Without entering into those more minute distinctions, we shall proceed to consider the effects of climate on the human body, under the three general heads, of the hot, the cold, and the temperate *.

In

---

* Professor Finke of Lingen, in Germany, has printed, in three volumes octavo, an essay towards a general system of medical geography; which, though a work of considerable merit, has not hitherto appeared in an English garb.

In this work, the learned author explains what he means by the term "MEDICAL GEOGRAPHY," namely, a collection of treatises on medical topography, arranged in a systematic manner. The arrangement, he has chosen, is derived from the latitudes of different countries. He begins with the temperate climates, and proceeds gradually to the torrid and frigid zones. His first division includes those countries which lie between the 35 and 45 degrees of latitude in Europe, Asia, America, and in the Southern Hemisphere. The second division includes those countries which

In regard to hot countries, though an instance is quoted, on authority entitled to some attention, of a native of Bengal, Numas de Cugna, who died in the year 1566, at the atonishing age of 370 years *, (at any rate, he was probably of an age far beyond any example in modern times,) yet hot countries in general, though in various respects calculated for the enjoyment of health, or exemption from disease, particularly during infancy, are far from being favourable to duration or longevity.

One of the strongest proofs that can be adduced of the latter position, is this, that when Kien Long, Emperor of China, in the year 1784, ordered all the old men to be collected in his extensive dominions, through the greater part of which the climate may be denominated hot, yet only four could be discovered who exceeded a hundred † years of age; and perhaps the age of some of these might not be properly authenticated. The population of China, according to the best and most recent accounts, amounts to above 200 millions. The proportion, therefore, of persons

---

which lie between the 35 degree of latitude and the tropics in both hemispheres. The third division includes those countries which lie between the tropics and the tenth degree of latitude in each hemisphere. The fourth division comprizes the countries near the line, which lie between the tenth degree of latitude north and south. The fifth division includes the countries between the the 45 and 55 degrees of latitude. The sixth, those between 55 and 65. And the seventh, the polar countries.

Much advantage may be derived by treating medical geography in this extensive and systematic manner.

* See Easton on Longevity, introduction, p. 17. He quotes two respectable Portuguese authors in support of this fact.

† See Memoires concernant les Chinois.—Three thousand of the oldest persons in the empire were entertained by the Emperor, on the 14th February 1785; and though among these, there were only four above 100, yet there were 192 persons in all, at the head of five generations. They were assembled that the Emperor might show them some marks of his paternal benevolence.

exceeding a hundred was very small indeed. There is every reason to believe, that a greater number of individuals, beyond 100 years, are now living in Scotland alone, where there are not even two millions of inhabitants.

Nor is it wonderful, that hot countries should be unfavourable to longevity. The human frame is too hastily brought to maturity. The body is enervated by the perpetual relaxation of the fibres, and the violent perspiration to which it is continually subjected. The food is of a less strengthening nature. The passions are more ardent; and the women, in those countries, often become mothers, at an age, when, in cold or temperate climates, they have hardly quitted the nursery.

It is certain, that there are various diseases peculiar to hot countries, as fevers, liver complaints, &c. which often occasion an early dissolution of the frame; but, on the whole, from the temperate manner in which individuals in these climates are obliged, and generally inclined, to live, they usually enjoy better health than in colder latitudes.—Their food is procured with little bodily exertion; they require but little clothing or shelter; and those who live in the humbler ranks of society, have seldom any thing to disturb their minds, or to agitate their passions.

Hot countries, also, are peculiarly favourable to the rearing of children. The management of infants is very simple, their diseases are few, and of no great importance*. We are informed, by an author of credible authority, that it is frequent, on the coast of Guinea, to see fathers who have two hundred children living at once†. This must certainly be in a great measure owing to the plurality of wives; but unless the climate were favourable to health, such numbers could not be reared in any circumstances. It is supposed, that about sixty thousand slaves are annually exported from Guinea; and, without exaggeration, that above eighteen millions of souls must have been sent out of that country, since the commencement of the slave-trade. What country, that was not healthy and well calculated for the rearing of children, could withstand such a drain of its inhabitants?

---

* Winterbottom's Account of Sierra Leone, Vol. II. p. 219.

† See Smith's New Voyage to Guinea, printed anno 1744, p. 202.——What a difference in this respect, to a district in Scotland, the parish of Kilsyth,

The coast of Guinea, it is true, is unwholesome to strangers *, but to the natives, we are told, that it is "*mighty* "*healthful*," and that few of them are afflicted with any distemper †. Scarcely any of the inhabitants, however, arrive at old age. They become old much sooner than Europeans,

---

Kilsyth, where, upon the whole, there are not quite three children alive to each family. See Stat. Acct. of Scotland, Vol. XVIII. p. 263.

* On this subject an intelligent friend has remarked, that persons born in the temperate climates, and who pass any considerable part of their life in the torrid zone, seldom attain longevity. The accommodating power of the human body appears to be very limited in this respect. Indeed the negroes, who seem to be designed by nature for the tropical climates, have manifestly very different constitutions from the whites. They are constituted to perspire more, and their perspiration has a remarkably rank and disagreeable smell, different from that of Europeans, which indicates, that some volatile matters are by that means carried off from their bodies, which may probably prove injurious to whites in those climates. The descendants of Europeans, however, sometimes live long in those very climates; and it is a remark in the West Indies, that, "when " a woman puts on a red woollen petticoat, (which they do when advan" ced in life), it is almost impossible to kill her."

† See Smith's Account of Guinea, p. 184.—Bosman's Description, Letter VIII.—And Lord Kaimes, in his Sketches of the History of Man, Book I. Sketch I. observes, that the African negroes, though living in the hottest known countries, are yet stout and vigorous, *and the most healthy people in the universe.*

Europeans, and appear in a state of decrepitude, when the latter have scarcely reached their grand climacteric. M. Adanson makes the same remark; the negroes of Senegal, he observes, are really old at the age of forty-five, and oftentimes sooner, and they seldom live to be older than sixty [*]. From the want of fixed data, it is impossible, for the most part, to determine their ages with any degree of precision. One instance only of longevity can be given with any degree of certainty. It was of a person named Addoo, who resided near the river Sherbro, and who remembered, when a boy about fifteen years of age, to have been in the island of Barbadoes. This occurred during the reign of Queen Anne, or, as he expressed it, "when the King of England "was a woman." Consequently, he must have been (in 1796) near one hundred years of age. He was alive in the year 1802.

Bosman, in his description of the gold coast of Guinea, says, that most of the negroes live healthful lives, but seldom arrive at great age. It is observable, that there are several grey headed people, who look as if they were old, but, in fact, are not so; and indeed, they are so enfeebled by early and excessive debauchery, that a man of fifty, (a good old age here), if seized by any sickness, generally leaves this world [*].

On the whole, we are inclined to believe, that hot countries are not prejudicial to the health of those who are born in them, and who are accustomed to the climate, though in general unfavourable to longevity.

---

[*] Voyage to Senegal.

[†] Bosman's Description of the Coasts of Guinea, Let. VIII.

Cold climates, on the other hand, are unfavourable to general health, but those who do survive the severities of such climates, are likely to live long *.

The disorders of cold countries, as the scurvy, consumptions, colds, &c. are numerous and fatal, and would be still more so, were it not for the precautions which are taken to guard against them. The labour that is required to procure food, and to make such countries habitable, is so great, that none but the strongest frames can long resist it. The number of children that die is proportionally more than in hot countries, and, consequently, population does not go on so rapidly. But as the food is nourishing, and as it requires great strength to resist the severities of such a climate, those who do survive, often attain a great age †.

Among the instances of longevity in cold countries, those from Norway are perhaps the most remarkable.

It is said, that in the diocese Aggherus in Norway, there were reckoned, at one time, (anno 1763,) one hundred and fifty couples, who had lived together upwards of eighty years; consequently, the greater number, if not the whole of these three hundred individuals, were upwards of one hundred years of age, and some of them much older ‡.

---

* Too great a degree of cold, however, is prejudicial to longevity. In Iceland, and the northern parts of Asia, as Siberia, men attain, at the utmost, to the age of only sixty or seventy.—Hufeland, Vol. I. p. 153.—See also p. 160.

† Hufeland, Vol. I. p. 158, thus expresses his opinion upon this subject. In districts, where mortality in general is very great, individuals may attain to a greater age, than in places, for instance, the warm countries of the East, where general mortality is less. Mortality being there, on the whole, very small, hence their extraordinary population; and infancy, in particular, suffers there much less, on account of the continually uniform and pure temperature of the atmosphere, yet a much smaller proportion of old people are found in these countries, than in the northern, where mortality in general is greater.

‡ Easton on Longevity, p. 74.

In the year 1761, of 6929 persons who were buried in the district of Christiana, in Norway, no less a number than 394, or one in eighteen, had lived to the age of ninety; sixty-three to the age of one hundred; and seven to the age of one hundred and one. In the diocese of Bergen, the persons who died amounted to 2580, of whom, eighteen lived to the age of one hundred, one woman to the age of one hundred and four, and another woman to the age of one hundred and eight *.

We are informed by Pontoppidan, that, in the year 1733, eight persons, natives of Norway, were collected, seven of whom were unmarried, who were all above a hundred, and six of whom were then married, that a jubilee wedding might be celebrated, for the entertainment of the King and Queen, who happened, that year, to visit their Norwegian dominions †.

What a contrast with the hot countries above described, where it is so uncommon to see a person who has reached even the sixtieth year of his age!

But the temperate climates are those which are best calculated for the preservation both of health and long life. Every circumstance combines for that purpose. The air, the diet, the clothing, the nature of the habitations, the education of the people, their turn of mind, the gradual alterations of weather, the certain and regular vicissitudes of the seasons, all proclaim the advantages of temperate climates.

---

* Easton on Longevity, p. 142.

† See Pontoppidan's Natural History of Norway, Part II. p. 259.—Lord Bacon says, that they live longer in cold and northern countries, than in hot, because the skin is more compact and close, and the juices of the body less dissipable, and the spirits themselves less eager to consume, and in better disposition to repair, and the air (as being little heated by the sun beams) less predatory.

climates. In them, as in Greece and Italy *, the human species grows to the greatest perfection; the form is the most complete; the mind the best formed; and the passions the best regulated. Happy, therefore, is the man, (if in other particulars, as in regard to government, &c. no untoward circumstances exist), who was born to reside in such a climate, or who is led, by any accidental circumstance, to dwell in it

2. SITUATION.

THE general climate of a country, however, is not the only point to be considered, because much depends upon the particular situation where the individual resides, whether it be high or otherwise.

Lord Bacon was the first who recommended elevated situations, as being conducive to health, partly grounding his opinion on the long life in general enjoyed by birds, owing to the purity of the air they breathe. He does not recommend, however, the tops of mountains †, but rising grounds, such as Arcadia and Etolia, where the inhabitants are reported to have lived long.

Recent discoveries have explained the cause of this circumstance.

---

* Arcadia and Etolia, and other parts of Greece, were celebrated for longevity, and many of the most distinguished Greeks, as Pythagoras, Pindar, Sophocles, Anacreon, Plato, Zeno, &c. &c. attained great age. Italy, however, was in some respects superior to Greece; for, in the 76 year of the Christian era, when a census or numbering of the people took place, there were 265 persons beyond 100 in that part of Italy that lies between the Po and the Appenines.

† This recommendation is certainly well founded, in so far as respects Great Britain at least; for very elevated situations, being most exposed to the vicissitudes of this varying climate, must, consequently, be peculiarly injurious to general health.

cumstance. Where the air is driven about, and is not suffered to become stagnant, (which must be the case in high situations), it is better calculated for respiration. There is less of that portion of air which is prejudicial to health, and more of that portion which is favourable to the vital principle. Besides, the malignant vapours of marshes, and the heterogeneous particles, or miasmata, which they contain, when carried about by winds, or raised to a certain height in the air, are deprived of their baneful influence, at some distance from their source, either by dilution or combination.

The celebrated Pallas informs us that, in a province of Russia, he saw many old people in the elevated districts; whereas in the plains, in that very neighbourhood, they were not distinguished for longevity.

Buffon's authority may also here be quoted in support of these doctrines. He observes, that there are generally more old men in high than in low countries. The mountains of Scotland, of Wales, of Auvergne, and of Switzerland, have furnished more examples of extreme old age, than the plains of Holland, Flanders, Germany, or Poland*

But though places, the situation of which is high, have in general purer air than those which stand low, yet this must not be admitted without certain limitations. The rule cannot be carried so far as this, that the higher the better. The greatest degree of habitable height, for instance, near the Glaciers, on the Alps, is, on the contrary, prejudicial to health; and Switzerland, without doubt the highest land in Europe, has produced fewer instances of longevity than Scotland. For this there are two reasons: First, the atmosphere, at a great height, is too dry, ethereal, and pure, and consumes, therefore, more speedily: Secondly, its temperature is too variable; heat and cold succeed each other too rapidly; and nothing is more unfavourable to duration of life than very sudden changes, more especially if accompanied with moisture *.

---

* Vol. II. p. 481.

3. Exposure.

The ancients paid much more attention to the situation of a city, or of a house, in regard to its exposure, than is usual in modern times, probably owing to this circumstance, that the art of manufacturing glass not having been discovered, they were not able to enjoy the advantages of light, and at the same time to protect themselves from the inclemency of the seasons, as the moderns can do. This is a subject, however, which merits attention, though the rules regarding it must vary in different countries and climates.

Hippocrates advises, that a man who comes a perfect stranger to any city, should consider well its situation, and how it stands with respect to the winds, and the rising of the sun; for if it be a northerly or a southerly situation, or if it front the rising or the setting of the sun, the consequences cannot be the same. He then explains the effects which may result from a city being of a southerly, a northerly, an easterly, or a westerly situation, and the particular diseases of each †.

In regard to villas, or country houses, Varro directs that they should, if possible, be placed at the foot of a mountain covered

---

* Hufeland, Vol. I. p. 59.

† See Clifton's Translations of Hippocrates, "Of air, water, and situation." p. 1. 3. &c.

covered with woods, in such a manner as to be exposed to the most healthy winds, and to enjoy the sun in winter, and the shade in summer. An eastern exposure he considered to be the best calculated for that purpose in Italy [*].

Palladius, on the other hand, recommends, that the villa shall front the south-east [†]. Both these authors seem to have had the climate of Italy more especially in view.

Columella is very particular in the directions he gives regarding the situation of a country house. He lays it down, as a general rule, that the front of the edifice should be turned away from the winds which are hurtful, and exposed to such as are salutary [‡]. He concurs with Varro, therefore, in recommending a situation fronting the east, as that position exposes the villa to the summer, and defends it from the winter winds. In proportion as the ground, on which the villa stands, declines to the east, the more freely it receives the winds of summer, and it is less infested with the storms of winter.—These things, he observes, are of great importance, as that place must be reckoned unhealthy, which is not exposed to the sun and to dry winds, by which that nocturnal hoar frost is dried up, which rusts and defiles every thing on which it falls, and which is so pernicious to men, and to animals, and to vegetable life in general [§].

The celebrated Pliny does not confine his attention to one climate, but extends his views still farther; for he says, that villas or country houses, in warm climates, ought to front the north; in cold climates, the south; and in temperate climates, the east; and, on the whole, his directions seem to be judicious *.

---

[*] Varro, de R. R. lib. 1. cap. 12.

[†] Pallad. lib. 1. tit. 7.

[‡] The effects of the different winds on the human body merit attention, they must differ so much in various countries, that no general system can be formed. There are some good observations upon this subject in Pansa's Aureus Libellus de Propaganda Vita, cap. 28. p. 107.

[§] Columella, Lib. 1. c. 5.

Nor is the situation of a house, in town, a matter of trifling importance; at least, in a northern climate, that position ought to be preferred, which fronts the sun in winter, and receives, in that unpleasant season of the year, all its beneficial influences.

4. SITUATION IN REGARD TO WATER.

AMONG the particulars of the greatest importance, respecting a place of residence, is its situation with regard to water; whether it be near the sea, or a lake, or a river, or at a distance from water; and also, whether the water in the neighbourhood be wholesome or the reverse.

The air, in the neighbourhood of the sea, is particularly distinguished by its salubrity. In that situation, in cold countries, there is more regularity of temperature, and more mildness, and in warm ones, less intense heat, than in inland places, in other respects similarly circumstanced; and the breezes, which come from the ocean, bring with them a number of minute particles of salt, which, though unfavourable to the growth of trees, yet are supposed to have, in many

---

* Pliny, Nat. Hist. lib. 18. For these particulars, see Dickson's Husbandry of the Ancients, printed at Edinburgh, anno 1788, Vol. I. p. 27, 28, &c. Lord Bacon in his Essays, says, "he that builds a fair house "upon an ill seat, committeth himself to prison; neither do I reckon it "an ill seat, where the air is unwholesome, but likewise where it is un"equal; as you shall see many fine seats set upon a knap of ground, en"vironed with higher hills round about, whereby the heat of the sun is "pent in."

many cases, very beneficial effects on the organs of the respiration of animals *.

Lakes, or large pieces of fresh water, are not, in general, considered to be so healthy as the ocean. The salt, in sea water, preserves it from corruption, and the exhalations from the ocean are attended with less putridity than from a lake. At the same time, there is no place in Scotland, where, proportionably for its population, a greater number of old people have been found, than in the neighbourhood of Loch-Lomond, which is the largest and finest piece of water in Great Britain; and there is reason to believe, that large lakes, more especially in a mountainous country, temper the extremes of the atmosphere, (because water is of a more steady temperature than earth), and by promoting at the same time a free circulation of the air, are favourable to health and longevity †.

Large rivers are, on the whole, favourable to health, if they do not stagnate ‡; but there is no air so pure and wholesome

---

* See Buchan's Practical Observations on Sea-Bathing, p. 165. The sea spray, unless in stormy weather, when it is too abundant, is not unfavourable to the growth of the smaller plants, but seems to have a noxious effect on the leaves of trees.

† In the Account of the Parish of Luss, (see Statistical Account of Scotland, Vol. XVII. p. 239.), there are two lists of old people exceeding 80 years of age, amounting to twelve in number, and one aged 78; and it is there remarked, that some families, in that district, seem to have a hereditary right to long life, of which some examples are given. Some years afterwards, anno 1808, a very accurate list was made up of old persons in that parish, when it appeared, that out of a population of about 953 souls, no less a number than 21 exceeded 80 years of age. It has been remarked, both here, and at other fresh-water lakes, that, from the greater lightness of the water, the waves are shorter, and more easily raised by the wind, than is the case at sea, where the water has more specific gravity.

‡ It is said, that when the plague raged in London, anno 1665, it never attacked those who inhabited the houses on London Bridge, and that many persons, for their security against it, lived in barges on the River

wholesome as in the neighbourhood of a small stream, running over a rocky or a pebbly bottom. The most probable way of accounting for the salubrity of the air near running streams is, that it seldom stagnates in their neighbourhood; and that the water probably absorbs the noxious effluvia of animal and vegetable matter, with which the air may be combined. From the purity of such air, there is no means more likely to recover the health of the invalid, than to be constantly carelessly strolling along the margins of such streams.

Doctor Priestly observes, that the sea and other large bodies of water are an important resource, which nature has provided for restoring the salubrity of the corrupted air. He found that all kinds of noxious air were restored, by continued agitation in a trough of water, the noxious effluvia being imbibed by the water. Hence, he concludes, that the agitation of the sea, and of large lakes and rivers, must be highly useful for the purification of the atmosphere, the putrid matter being absorbed by the water, and imbibed by marine and aquatic plants, or applied to purposes yet unknown *.

In regard to situations at a distance from water, it is hardly necessary to make any particular observation, as it so rarely happens, at least in European countries.

But the vicinity of water is of material consequence in other respects, as that element forms so important a part of the diet of the people. This, however, properly belongs to a subsequent part of the Work, where the means will be pointed out of purifying water, and of rendering that article a

---

River Thames, where the air was purified by the rising and falling of the tide, 12 feet, twice a-day.

* See his Experiments and Observations, Vol. I. § 2. and 4.

a more wholesome and pleasant beverage than is generally the case at present.

4. NEIGHBOURHOOD OF WOODS.

ANOTHER circumstance to be considered, with regard to the situation of a place of residence, is the woods in its neighbourhood. To be surrounded by immense forests, is not a desirable situation; as the country, in that case, is probably undrained and uncultivated; and the extent of ground covered with wood, impedes the free circulation of the air, corrupts it by the putrid decomposition of dead leaves; and by keeping the surface of the earth always moist, renders the air unwholesome. But to have some wood in the neighbourhood, is certainly of service.

The discoveries of modern philosophy have thrown new light upon this subject. It appears, that trees and other vegetables, during the day, exhale oxygen gas, or pure air, and, consequently, contribute to make it better calculated for the use of animals. Trees are not only useful in this respect, but are also of service, from the shelter they afford from cold winds, and from the shade they yield against the heat of the solar rays *. Surrounding houses, however, too closely, with planting or thick woods, ought to be avoided. Wood not only obstructs the free current of the air, but sends forth great quantities of moist exhalations, which render it constantly damp. Wood is very agreeable at a proper distance from a house, but should never be planted too near it, especially in a flat country.

Many

---

* It is also conjectured, that vegetation contributes to lessen the humidity of the atmosphere, and thus to render it more wholesome. The water which falls in dews, &c. is decomposed; the pure part, or the oxygen, is emitted or exhaled, whilst the hydrogen is imbibed by the plants.

Many of the gentlemen's seats in England are rendered very unwholesome from the great quantity of wood which surrounds them.

5. Soil.

One of the most important circumstances, connected with the salubrity of any place of residence, is the soil in its neighbourhood, whether dry, clayey, or marshy.

Of these, the marshy is unquestionably the most pernicious, more especially if connected with clay, or much stagnant water, as it frequently emits carbonated hydrogen gas, the most deleterious of all the airs, in considerable quantities. It is singular, however, that marshes of a boggy sort, or where the soil consists of peat, are not prejudicial to health*.

---

* This important observation is strongly corroborated by the following particulars, extracted from the Statistical Account of Scotland.—"That the natives of a place full of mosses, and interspersed with swampy ground, (the parish of Cabrach in Aberdeenshire), should be healthy and subject to no local distemper, may appear a little problematical; yet, excepting a few fevers, (which are by no means frequent or fatal), the hooping-cough, measles, and small-pox in the natural way, are the only diseases known here. *The most common disease of which they die is old age.* Of late, the consumption has appeared in four instances, which proved fatal, excepting in one case. Those who died of it were attacked when at service in other counties. It is not pretended to account for the healthiness of the people. Perhaps the great fires, constantly burning in their houses, have considerable influence in counteracting the effects of the exhalations which are continually rising from the earth. Strangers, not accustomed to them, catch cold." Statistical Account of Scotland, Vol. VII. p. 366.—Smith, in his account of Waterford, note, p. 213, states, that turf-pits emit unwholesome vapours, which would be of ill consequence, were it not that most of these bogs are situated on high grounds, and in mountainous places, so that the gentlest breeze of wind brushes off the noxious exhalations, which renders those places more healthy than they would otherwise be. The real cause, however, probably is, that neither insects nor fishes can live in peat-water; and it is the stench from dead animals that forms what is called marsh miasma.

In regard to marshy situations in general, Doctor Price has written a short essay, containing proofs of their insalubrity, and confirming a paper by Dr Priestley, on the noxious effects of stagnant water. The proofs, he adduces, are taken from tables, given by M. Muret, of several parishes in Switzerland, in which a comparison is made between mountainous and marshy countries. The difference is very great indeed. One half of all born in the mountainous district, live to the age of 47, whereas the same proportion in the marshy parish live only to the age of 25. In the hills, one in twenty of all that are born live to 80; in the marshy parish, only one in fifty-two *.

Clayey soils, in general, even where they are not troubled with stagnant water, are not favourable to health. As no rain can penetrate through them in wet weather, they must always be incommoded with surface-water, in consequence of which, vegetation is chilled, the atmosphere is rendered cold and unpleasant, and the climate is less favourable to health.

A dry soil, however, which immediately absorbs the rain that falls, is undoubtedly the healthiest situation for a place of residence, in so far as depends upon soil. The sandy or gravelly soils have this advantage in great perfection, but, on the whole, the chalky is probably the most wholesome, as

---

* Price on Reversionary Payments, Vol. II. p. 378.—There are other differences mentioned in the essay, but it seems unnecessary to insert them in this work. On the subject of fens and marshes, Lord Bacon remarks, that they are more malignant to strangers than to natives, and that salt marshes, where the sea ebbs and flows, are less wholesome than those of fresh water, probably because the quantity of dead animals is greater in stagnant salt water. Regarding the unwholesomness of marshes, and the causes thereof, some valuable observations are to be found in the works of Doctor Rollo, Doctor Blane, &c.

as its absorbent powers tend greatly to purify the superincumbent atmosphere *.

7. FUEL.

THE importance of fuel, particularly in cold and damp countries, cannot be questioned; and, in such climates, it is particularly desirable to be in the neighbourhood of that essential necessary of life. Fuel is of importance,—1. For cooking victuals;—2. For warmth;—3. To remove damp, which is of more consequence than even giving heat, for cold can be obviated by warm clothing, whereas fuel alone can prevent houses, in moist countries, from becoming damp and unwholesome;—and, in the last place, fuel is of consequence, as furnishing light, there being many a cottage, where, after sun set, the light they have is principally from the fuel they burn.

Of the different sorts of fuel principally used, as wood, turf, and coal, the latter, on the whole, is to be preferred, where the quality is of the best sort. The smoke of wood is said to be injurious to the eyes, and that of turf or peat is not much relished by those who have not been accustomed to it.

8. THE ATMOSPHERE.

THE healthiness of a situation must also, in some respects, depend on the nature of the atmosphere, whether it is dry or moist, hot or cold, inland or maritime †.

---

* Buchan's Practical Observations concerning Sea-bathing, Preface, p. 16. Observations, p. 169.

† These particulars will afterwards be more fully discussed. See Part II. Chap. I. on Air.

Egypt, so much celebrated in ancient as well as modern history, is certainly one of the dryest countries known, its fertility arising not from rain, but from the overflowing of the Nile. It is a country, however, very unfavourable for health. Ireland, on the other hand, which is a wet or damp country, is justly distinguished for the strength, the size, and the healthiness of its people *. Other circumstances must also contribute to the salubrity of Ireland, but it certainly proves that moisture is no enemy to health, where other particulars are not unfavourable to it.

On this subject, Hufeland justly remarks, that too high a degree of dryness, as well as too great moistness, are unfavourable to duration of life.—Air, therefore, which contains a mixture of fine moisture, is the best for attaining to great age. The reasons he assigns are as follow: Moist air, being in part already saturated, has less attractive power over bodies, that is to say, consumes them less. Besides, in a moist atmosphere, there is always more uniformity of temperature; and fewer rapid revolutions of heat and cold are possible. Lastly, an atmosphere somewhat moist, keeps the organs longer pliable and youthful; whereas, that which is

---

* See various instances of longevity in Smith's account of Waterford, p. 375. History of Cork, p. 427. and History of Kerry, 419. Doctor Watkinson has collected a number of observations regarding the salubrity of that island. He states, on the authority of Rutty, that though the Irish lived in a constant *balneum vaporis*, yet that the moisture and temperate quality of the air is a great advantage to them; for it not only secures them from the pernicious effects of heat and drought, but likewise defends them from the ill effects of excessive cold and dryness, all which are productive of more acute and violently inflammatory disorders than are to be found in Ireland. In favour of a moist climate, it is to be observed, that, from the bills of mortality kept in Dublin, it appears, that the greatest numbers of persons are buried in dry years, and that Wintringham's observation in regard to England, that the moist seasons are the most natural and healthful, may be extended to Ireland. See a Philosophical Survey of the South of Ireland, p. 375. and 377.

is too dry, brings on much sooner aridity of the vessels, and all the characteristics of old age *.

9. CONTINENTS OR ISLANDS.

ANOTHER point of view, in which this subject may be considered, is, whether the place of residence is situated on a continent, in a large island, or in a small one.

Continents have great advantages, in consequence of the general regularity of the seasons; for uniformity in the state of the atmosphere, particularly in regard to heat, cold, gravity, and lightness, contributes, in a very considerable degree, to the duration of life. But where a country situated on the continent is distinguished, as Germany is said to be, for a continual mixture of heat and cold, of a northern and southern climate, where one experiences, in the course of the same day, frost in the one part of it, and the utmost heat in the other; and when the month of March may be extremely warm, and that of May accompanied with snow: In such a climate, though healthy in other respects, and though, in general, people attain there a considerable age, yet instances of great longevity must occur more rarely than in neighbouring countries, lying almost under the same degree of latitude, but where the variations are neither so great or sudden, or where they are tempered by the healthful influence of sea air †.

The

---

* Vol. I. p. 161.

† This description of the climate of Germany is taken from Hufeland, Vol. I. p. 161. Had it not been for the authority of so laborious and intelligent an author, I should hardly have believed that the climate of Germany was so exceptionable in regard to sudden variations. A correspondent writes me, " I have experienced the climate in the South of France variable like that of Germany. In a ride of 8 or 9 miles, north from

The climate of large islands is certainly liable to the same objection in regard to its changeability, but they possess, at the same time, some advantages over a continent; for, in the first place, the high winds to which they are exposed drive away all malignant vapours; and, consequently, epidemical distempers are extremely rare. In the second place, the beneficial influence of the sea air is of the greatest importance. At the request of the late Sir John Pringle, the ingenious Doctor Ingenhouz made a number of experiments to discover the relative salubrity of the air at sea, on the coast, and inland *. As far as this point was capable of being determined by experiments made with the eudeometer, (which, however, is still an imperfect instrument), the Doctor found, that the air was most pure at sea, next in purity on the coast, still less so, with some exceptions, in the interior of the country, and worst of all in the neighbourhood of marshes and swamps; and that the healthy appearance, and particularly the appetite of the inhabitants, varied in a similar ratio.

There

---

from Dijon, hearing a man thrashing in a barn, I went and had some conversation with him; and, among other things, asked him, why there were no vineyards in his neighbourhood? His answer was, "Monsieur, il y a gelée douze mois de l'année," which, according to my interpretation, is, Sir, there is not a month in the year in which it does not freeze here. At Marseilles, I have dined in January with the window open; and at night, on the same day, could hardly go to sleep for the extreme coldness of my bed-chamber, which had no fire-place. On the continent, the moment the sun sets, extreme cold succeeds a hot day; but in Dublin, in January, I found the night nearly as soft and warm as the day.

* Nouvelles Experiences et Observations sur divers objets de Physique. Par Jean Ingenhouz, &c. Paris, 1789. See also Buchan on Sea-bathing, p. 163. The great component parts of the atmosphere, namely, its oxygen and azote, are in almost all situations nearly the same. See Part II. Chap. I. on Air.

There is no country that, for its population and extent, can produce more instances of great longevity than Britain. In this respect it is acknowledged to be superior to the opposite continent. Indeed, Whithurst asserts, on information which he says he received from the best authority, that the natives of the continent of North America are shorter lived than those of Great Britain and Ireland; and that a British constitution will last longer in America than a native one *. This assertion, however, is contradicted by an intelligent American author, who contends, that the probabilities of life, *in all its stages*, from its commencement to the utmost possible verge of its duration, are higher in the United States of America than in such European countries as are esteemed the most favourable to life; and it cannot be doubted, that the facts he adduces are strongly in favour of that idea, though it must be observed, that any circumstance of that sort ought to be attributed to the inconsiderable proportion of the inhabitants of America who reside in towns, compared to those who live in the country †.

But small islands, and peninsulas surrounded by the sea,

---

* Whithurst's Inquiry into the Original State and Formation of the Earth, 2d edition, in quarto, printed at London, anno 1786, p. 166.

† See Barton's Observations on the Probabilities of the Duration of Human Life in the United States of America, published in the Transactions of the American Philosophical Society, Vol. III. p. 25. The intelligent Dr Waterhouse of Cambridge in New England, also states, that there is no region on earth where the inhabitants attain a greater age than in that part of America. " The many instances of longevity," he adds, " which " our country affords, are owing, perhaps, to the mediocrity of our cir- " cumstances. We are not rich enough to be very luxurious, nor so " distressed by poverty as to be pressed prematurely to the grave. No " man is overwhelmed in poverty in this happy country, unless he be a " drunkard."

and free from marshes, have, at all times, been justly accounted the cradles of old age. The facts in proof of this assertion are so numerous, that it would tire the patience of the reader to go through them all distinctly. Nor is this observation to be confined to one latitude; it extends over all. In southern climates, for instance, the observation holds good in regard to the Bermudas islands, Barbadoes, and Madeira; and, in northern climates, it is found to be the case in the Western Islands of Scotland, and in the Orkney and Shetland Isles; and this is no marvel, as Lord Bacon observes, seeing the air of the sea doth heat and cherish in cooler regions, and cool in hotter *.

10.

---

1. *Bermudas.* The inhabitants here live, some to an hundred years, and something upwards. Many do live till they are nigh an hundred, but few above. And, when they die, 'tis age and weakness that is the cause, and not any disease attends them. Lowthrop's Abridg. of Phil. Trans. Vol. III. p. 561.—2. *Barbadoes.* Anno 1780, there was a dreadful hurricane at Barbadoes, when fifteen people lost their lives, four of whom were above an hundred, and one an hundred and fifteen. Easton on Longevity, p. 171.—3. *Madeira* This island is remarkably healthy. Dr Thomas Heberden, in Phil. Trans. Vol. LVII. p. 461, has given us an account of the increase and mortality of the inhabitants of that island, from which it appears, that the expectation of the life of a child just born at Madeira, is about 39 years, which is more than double the expectation of a child just born in London. Only a fiftieth part of the inhabitants of Madeira die annually, whereas, in London, it is in the proportion of one to 20 three-fourths.—4. *The Hebrides.* It appears, from Martin's description of the Western Islands of Scotland, that the inhabitants are healthy and long lived. He mentions one person in South Uist aged 130, who retained his appetite and understanding to the last. Many persons in the Isle of Sky arrive at great age; but the Isle of Jura is the most remarkable for longevity; among several instances of which, it is mentioned that one Gilour M'Krain lived to keep 180 Chrismasses in his own house.—5. *Orkney Isles.* Both from Martin's account of the Orkneys, and Wallace's description of them, it appears that the natives are healthy, and that several have lived beyond a hundred.—6. *Shetland Islands.* In these they also arrive at a great age. Buchanan, in his history, (lib. 1.) mentions one Laurence, who lived in his time, who married at a 100

10. RESIDENCE IN A TOWN, IN A VILLAGE, OR IN THE COUNTRY.

THE last circumstance to be considered, in regard to residence is, whether it is in a town, in a village, or in the country.

Large towns have been emphatically called *the graves of the human species* *, and certainly they are not favourable to health and longevity. If a number of individuals, crowded into a room, render its air unwholesome, an immense population, assembled in a great city, must, to a certain extent, have the same effect, though the circulation of the air is not so completely impeded within the circuit of a town, as in a house or a chamber †. In towns also, great quantities of putrid matter are collected in the kennels and common sewers, in church-yards, in the shambles, in market places, and about the stables of the more opulent citizens. In large towns, and in their immediate neighbourhood, many unwholesome manufactures are car-

ried

---

years, and died at 140, rather of old age than of any distemper; and the inhabitants say, that one *Fairville* lived to be 180, and never drank any malt liquor, distilled waters, nor wine; his son lived even longer, and his grandchildren to a good old age. Martin, p. 373.

* The Roman poet justly exclaims against

——Pericula mille
Sævæ urbis.

† The constitution of the generality of citizens may be denominated weak, irritable, and easily susceptible of diseased action; and when men are crowded together, to a certain degree, they engender diseases, not only fatal to themselves, but which are contagious, and therefore destructive to others. See Buchan on Sea-bathing, Preface, p. 7. also Work, p. 47.

ried on; the atmosphere is darkened with clouds of smoke from innumerable chimneys, by which the light and genial warmth of the sun is frequently intercepted; and when, to these circumstances, are joined luxurious manners, unwholesome food *, improper clothing, irregular hours, want of exercise, and, above all, the means which great towns furnish of gratifying, to an extreme, all the sensual appetites, is it to be wondered at, that the inhabitants of towns, and still more of great capitals, should be unhealthy and short lived; and that, instead of keeping up their own numbers, it should be necessary for them constantly to have recruits from the country to preserve their former quantum of population.

It may be said, that many old people are found in considerable towns, and even in large capitals, like London and Paris. But the proportion is very small †; and it is more than probable that the foundation of their health and strength was laid in the country; and a good basis being once established, their constitutions were better enabled to resist the dangers of an unhealthy residence.

Villages, if properly situated, and kept under due regulation, are certainly favourable to health; but, for that purpose, they ought to be placed in a dry soil, on a shelving bank,

---

* This is a remark as old as Friar Bacon, who observes, that plants growing in a dunged soil, produce articles which sooner putrify than where the soil is not dunged; and that herbs and trees, growing in a good air, are also more remote from corruption. It is no wonder, therefore, that the milk, the flesh, the fruit, and the vegetables growing near a town, should be less wholesome than what is produced in the purer air, and less corrupted soil of the country.

† The sum of deaths in the London bills of mortality, from 1728 to 1758, amounts to 750,322, of which number it is said that 242 persons survived 100 years age; but I consider even that to be much exaggerated.

bank, near a running stream, the houses not too contiguous to each other, and in single rows, rather than in regular streets. Where villages are well situated, such is their superiority in regard to health, that, in all cases of accounts, the courts of law in England have determined, that in a given number of persons at two places, namely, a country village or the metropolis, the duration of human life in the village, ought to be computed at fifteen, compared to ten and a half, in London[*].

By some it is affirmed, that man is by nature *a field animal*, and seems destined to rise with the sun, and to spend a large portion of his time in the open air; to inure his body to robust exercises, and the inclemency of the seasons; and to make a plain and homely repast only when hunger dictates[†]. But here the moralist goes too far. A country residence is certainly well calculated for mere existence; but what would become of all the pleasures of social life, and all the improvements of science and of art, if people were perpetually to live in a scattered or insulated state, and solely in the country?

The absurdity of such an idea has been well described by the celebrated Addison, who gives an account of a young gentleman, of a considerable estate, who had been educated by a tender mother, with so much care for his health, that she made him good for nothing. Reading, she quickly found, was bad for his eyes, and writing made his head ach. He had got, by these means, a great stock of health, but nothing else; and, if it were a man's business *only to live*, there could not be a more accomplished young fellow in the whole country. Such men may really be called *field animals;* and indeed are of no manner of use, but to keep up their families, and transmit their lands and houses in a line to posterity*.

---

[*] Hints illustrative of the Utility of an Insurance Company for the counties of Kent and Sussex. Printed anno 1804, p. 7.

[†] See Dr Fothergill's Observations on Longevity, Annual Register, anno 1786, article Natural History, p. 69.

To retire to the country, however, towards the conclusion of a busy and well spent life, may prove a wise and happy conclusion to these sublunary scenes †. In old age, quiet is desirable; and agriculture is an occupation which is sufficiently interesting to command the attention, without agitating, as the pursuits of gain or ambition would probably do, the most violent and destructive passions of the human mind. Is it then possible to conceive a more glorious spectacle, than to see a great and respectable character, after having contributed to save his country, to improve its soil, or to ameliorate the condition of its inhabitants, quitting the active scenes to which he had been accustomed, and endeavouring, in a more confined sphere, to carry on the same system of generous attention to the happiness of others? and thus fulfilling that best of maxims, "THAT THE POWER OF DOING GOOD, IS THE

---

* The Spectator, No 123.

† A country life, as Bacon justly remarks, is well fitted for long life; it is much abroad, and in the open air; it is not slothful, but ever in employment; it feedeth upon fresh cates, and unbought; it is without cares and envy.

The increase of population, also, where a country life generally prevails, is a strong argument in its favour. In some provinces of North America, the population is doubled in 15 years, and over all that continent in 25 years. How different, in this respect, from towns, which require recruits from the country. Price on Reversionary Payments, Vol. I. p. 276. and 277. See Derham's Physico-Theology, Vol. I. p. 262. note, regarding the great ages of people leading a country life. Also Plot's Oxfordshire, c. 2. sect. 3. and c. 8. sect. 54.; and Staffordshire, c. 8. sect. 91.; also Phil. Trans. No 310.

"PROPER LIMIT, BY WHICH OUR WISHES FOR EXISTENCE "OUGHT TO BE BOUNDED."

In regard to mere health, at the same time, there can be no comparison between a town and country life. Sir Hans Sloane, Fontenelle, and a few others, may be mentioned, whose lives were principally spent in cities, and yet extended to a great length. But the difference between the two, has been ascertained by political arithmeticians, with considerable accuracy. The result will appear from the following table, which gives it about two to one in favour of the country.

PROPORTION of People who die annually in Great Towns, in Moderate Towns, and in the Country.

1. In great towns, from $\frac{1}{19}$ or $\frac{1}{20}$ to $\frac{1}{23}$ or $\frac{1}{24}$.
2. In moderate towns, from $\frac{1}{25}$ to $\frac{1}{28}$.
3. In the country, from $\frac{1}{35}$ or $\frac{1}{40}$ to $\frac{1}{50}$ or $\frac{1}{60}$.

This, however, must be understood with some exceptions, as moderate towns may be so ill situated as to increase the proportions of deaths, and the proportion in great towns may be decreased by sudden increase of healthy inhabitants in the prime of life *.

Before the subject of climate is dismissed, it may be proper to remark that, in many cases, a change of residence must take place, sometimes from a hot to a cold climate, and sometimes from a dry to a damp one, or the reverse.

To change from a hot to a cold climate is generally prejudicial, unless where persons have been accustomed, from their

---

* Price on Reversionary Payments, Vol. I. p. 296.

their infancy, to bear cold. The frame cannot stand so great an alteration, and all the differences, in point of food, clothing, &c. that must take place. Unaccustomed to take precautions against cold, and not believing them necessary, those who are subject to such an alteration must suffer from perpetual neglect and imprudences, and generally sink soon under the inclemency of the seasons, and the hardships to which they are subjected. The want of heat is particularly felt, insomuch, that an Italian nobleman, who found himself miserable in this country from the cold he experienced, declared his full conviction, " That the moon of Italy had " more warmth in it than the sun of England."

To go also from a dry to a damp climate, is unfavourable to health. Hence several of those emigrants, who have been compelled to exchange the dry climate of France, for the humid atmosphere of Great Britain, complain, that they suffer much from the change, and, in particular, that their eyes are much affected by it. Among the emigrant priests, however, who live with great regularity, the mortality is extremely gradual.

To go, however, from a cold and damp, to a dry and warm climate, more especially at an advanced period of life, may tend to promote health and longevity. It is said, that old people, who go even from Portugal to the Brazils, get a new lease of life. The attentions which are necessary in a bad climate, render a good one, where they are not so essential, delightful to the indolence of old age; and old people may, in such climates, be almost constantly in the open air, which is highly favourable to good health *.

Such

---

* The best change, according to Doctor Short, is, when persons who are natives of dry, wild, and mountainous places, whose fibres and vessels are naturally too tense, whose juices are strong and grumous, and who are addicted to choler and melancholy, take up their residence in a low,

wet,

Such doctrines as these have naturally suggested a plan, by which an artificial climate might be procured in any country. We are informed by Dr Rush, that the late Dr Dewit of Germantown, who reached nearly an 100 years of age, after he became an old man, lived constantly in a stove-room, and seldom breathed an air below 70°. In Sweden also, by means of stoves, they always keep their chambers in the same temperature, notwithstanding the severity of their climate, whereas, with us, the aged generally die in winter; and many individuals, in a weak and consumptive state, are obliged to fly to warmer climates, as the only means of safety. Might it not then be of the greatest service, both to the aged and to the consumptive, to have houses erected, of such a peculiar construction, that the air could always be preserved not only pure, but nearly of the same, and of rather an elevated temperature; so that the invalids, who resided in them, should never be affected by the vicissitudes of the seasons. Such an idea, it must be admitted, cannot be a general remedy or resource, but it is well entitled to the attention of those who are in affluent circumstances, by some of whom, it is hoped, the experiment will be fairly tried, both for their own sakes, and for that of human nature in general *.

---

wet, and oozy situation. Those persons, on the other hand, who are born in low, wet, or watery places, and whose fibres and vessels are weak and lax, thrive best on high, dry, wild, rocky, and mountainous districts.—See Short's Observations on Bills of Mortality, p. 60.

* Dr Pearson of Leicester Square has paid particular attention to this subject, and has contrived the plan of a house, that would enable any individual, during the severest winter, to enjoy the pleasures of the genial warmth of a summer climate. On some such plan, hospitals for the aged, and the consumptive, might be erected. An ingenious author, in a very recent publication, (Manual of Health,) has entered into this subject very fully, see p. 217. &c. He observes, " I wish then, that asylums, or what

Conclusion.

We shall now proceed to give a general view of the consequences to be drawn from this extensive inquiry regarding a place of residence calculated for health and longevity.

The result seems to be, that it should be placed, if possible, in a temperate climate;—in a situation moderately elevated;—if in Great Britain, with a southern exposure,—in the neighbourhood of the sea, and, if possible, near a rapid stream or river,—having a command of water fit for drinking,—sheltered by trees, but not environed with extensive woods or forests;—with a dry soil;—having fuel in abundance;—with a moist, rather than a dry, atmosphere;—in an island, rather than on an extensive continent;—and either in a well planned village, or totally in the country. It may be added, that in advanced years, a person ought either to remove to a warmer country, or make an artificial

---

some one has termed, *conservatories of old age* *, may become common in Britain. They would be the most useful of hospitals; but they need not, in general, have the character of an hospital. Numbers of our countrymen might repose their grey hairs with independence, in comfortable retreats, secured by a very moderate share of the earnings of their own industry. This is not altogether speculation, one club for old people has had a most prosperous beginning. It was not established among us, and I am sorry to be obliged to import the fact from a country, from which all example is likely to operate as a warning."

He then gives an account of the "*Rétraite de la Vieilesse à Chaillot*," where a person, by advancing 1080 francs, in any installments, beginning not later than at 40 years of age, acquires the right of reception at 70, or at any other age, (provided the subscriber be incapacitated from maintaining himself,) not earlier than ten years after subscribing. He is to be maintained without further expence for the remainder of his life.

Gillespie's Hospital at Edinburgh, is a retreat for old age that had been previously established.

[*] This name seems to have originated with Dr Beddoes, see Hygëia, or Essays Moral and Medical, &c. Vol. II. p. 94.

artificial climate, constantly living, during the severe and inclement seasons of the year, in well constructed houses, in which the genial warmth of summer may at all times be commanded *.

---

* The following account of Marriages, Births, and Burials, in the Russian Empire, for the year 1801, was sent me by a respectable correspondent, and is strongly in favour of the healthiness and longevity of a northern climate.

Died.	Aged.	Died.	Aged.
258	91	9	109
345	92	15	110
220	93	1	111
170	94	1	112
408	95	1	113
178	96	2	114
162	97	12	115
211	98	2	116
204	99	1	117
216	100	12	120
37	101	1	123
32	102	1	124
14	103	2	125
17	104	2	128
32	105	4	130
7	106		
10	107	2,592	91 to 130 Average.
5	108		

Married, 298,158, Greek religion. Born, 1,179,476. Died, 726,278. Increase of Inhabitants, 453,198. Mortality, 726,278; reckoning at 3 per cent. gives 24,209,300 Inhabitants.

CHAP. IV.

ADVENTITIOUS OR MISCELLANEOUS CIRCUMSTANCES, TENDING TO PROMOTE HEALTH AND LONGEVITY.

THERE are several circumstances of an adventitious nature, of the most essential consequence to the health and longevity of an individual, which are in a great measure independent of him, and consequently ought properly to be considered in this part of the work.

These are, 1. His rank or situation in life, which originally depends upon the station in which his parents are placed, though it may afterwards be altered by his own industry and exertions. 2. His education, which must, also, in a great measure, depend upon them. 3. The particular occupation he pursues, most commonly determined on in consequence of their advice and directions. 4. His connubial connexion, which is generally sanctioned by the approbation of his parents, and ought always to be so, if they are in life;

and, *lastly*, a fortunate exemption from those accidents to which the human frame is so peculiarly liable.

We shall endeavour to explain, in their order, each of these particulars, and how they respectively bear on the subjects of our present inquiry.

1. RANK IN LIFE.

IT has been justly observed, that it is not the rich and great, nor those who depend on medicines, who become old, but such as use much exercise, are exposed to the fresh air, and whose food is plain and moderate *; and it is certain, that persons of that description stand the best chance of living long. The plainness of their food exempts them from many diseases, and renders those by which they are attacked less dangerous: The labour they must necessarily undergo, not only clears their blood from many noxious humours, but also gives them that sound repose at night which is so refreshing and desirable: Exposure to the vicissitudes of the seasons, makes their frame hardy and vigorous, and enables them longer to retain the possession of their strength and faculties; and being exempted from those violent passions which agitate the higher orders, their minds are less affected by various circumstances, which occasion so many fatal disorders among persons of a superior rank in life.

Hence it would appear, that the situation of the middling, and even the lower orders of society, is peculiarly favourable to health and longevity.

---

* Hufeland, Vol. I. p. 164. Fothergill, Annual Register, anno 1786, Natural History, p. 64. See some excellent observations on this subject, in Short's Tables of Bills of Mortality, p. 145. 146. 147.

It is contended, however, that the situation of the lower orders is miserable, for want of richer food, finer liquors, better houses, and more substantial clothing. Let us consider these points separately.

1. Those who account it an advantage to live on great quantities of rich food, do not consider the consequences resulting therefrom. If they were to have a luxurious repast spread before them, and were told, that if they ventured to partake of it, they were immediately to be subjected to the severest tortures, the instruments of which were placed before them, few would wish to take a share in such an entertainment. Yet, in fact, the case is nearly similar with those who live luxuriously, for though the tortures they must experience are not immediate, yet they are certain. The gout, and various other complaints to which they are afterwards subjected, the necessary consequences of these rich repasts, sooner or later do attack them, and make them sincerely wish that they had lived on plainer fare, and had not yielded to the temptations placed before them.

2. The stronger sorts of liquor are certainly of use as medicines, but are not essential for health or strength. They may be of service in curing disease, but the constant use of them not only destroys their salutary effects as medicines, but occasions a variety of disorders. There is no liquor, on the whole, so well calculated for the use of man as the element of water itself, provided it is freed from every noxious mixture. In a future part of the work, when the subject of liquid food is treated of, (See Part II. Chap. II.) the means will be pointed out by which this valuable beverage, in its purest state, will be rendered accessible to the

poorest individual, in almost any situation, where water is at all to be had in any quantity.

3. In regard to warm houses, there is reason to believe, that the exclusion of air is too much attended to, even in these northern climates, unless where sickness or old age may render it necessary. In proof of this assertion, it may be stated, that Doctor Lyne, an Irish physician, who died of the small-pox at the age of 85, built a house in a peculiar manner, so as to have the full benefit of the circulation of air. Every window had another opposite to it, none of which he ever suffered to be shut or glazed, but they were continually kept open, without any defence against the weather. The room the Doctor lay in, had four open windows, two on each side of his bed. It was remarked, that for fifty years together, nobody died out of his house, although he always had a numerous family. Upon his death, his son glazed all the windows, soon after which there were several buried out of the house *. He carried this doctrine to such an excess, as to contend, that no house was wholesome, "where a dog could not get in under the "door, and a bird at the window †."

4. Nor is warm clothing, except to infants, so essential as many people imagine; at least much depends upon custom. At first, an addition to the usual quantity is found of service; but the effect of it is soon lost. A story is told of Lewis XIV. who observed a person, having the appearance of a gentleman, in a remarkably cold day, dressed in silk,

with

---

* Smith's State of the County and City of Cork, Vol. II. p. 429. Watkinson's Philosophical Survey of Ireland, p. 189.

† In China, however, in warm weather, they have no other door but an open matted screen, and the windows are either entirely open, or of thin paper only. Barrow's Travels in China, p. 349.

with his hat under his arm, and seemingly not in the least affected by the severity of the weather; whereas the King, in a covered carriage, clothed in the most substantial manner, and even with all the advantages of fur, could not keep himself warm. The King, struck with the circumstance, stopped his carriage, and requested the gentleman would have the goodness to inform him how this could happen. "If your Majesty, (he said in a whisper), "would do as I do, *put all your wardrobe on your back at* "*once*, you would be as warm as I am." And, in fact, a person, by custom, may be as well protected from cold by moderate clothing, unless carried to an extreme, as by the heavier and more substantial.

But were it admitted, that, in some respects, more especially during sickness and old age, the situation of the poor is not so eligible as those who move in the higher spheres, or have more wealth at command; yet the circumstances of the lower orders ought to be compared, not with the higher ranks in civilized society, but with man in a barbarous state, and then the advantages of the situation in which they are now placed, will appear more evident. Without going to the wilds of America, or to the forests of New Holland, let us consider what was the state of districts in our own country, in times not very remote. It is reported, on the most respectable authority, that, prior to the year 1745, that part of Scotland called Rannach, in the interior parts of the Highlands, was inhabited by a race of people, whose mode of living may be judged of from the following particulars. The bulk of the tenants there had no such thing as beds, but they lay on the ground, with a little heather or fern under them. One single blanket was all their bed-clothes, excepting their body-clothes. Their houses were miserable huts, into which one could not enter but on all-fours; and, after entering, it was impossible to stand upright. They had little to live on; and grain was so difficult to be had, that they were obliged to bleed their cows several times in the year, to boil the blood, and to eat it like bread *. The situation of this district is now completely altered; and its inhabitants enjoy at present as many of the comforts of life as any of their neighbours. It cannot be doubted, however, that even the common beggars in Scotland now possess more of the comforts of life, than was formerly enjoyed, even by a higher description of persons, in rude and barbarous ages.

Nor was England itself in a better state about two or three centuries ago. Erasmus ascribes the frequent plagues in England, to the nastiness and dirt, and slovenly habits among the people. "The floors," says he, "are commonly of clay, strewed with rushes, under which lies, unmolested, an ancient collection of beer, grease, fragments, bones, spittle, excrements of dogs and cats, and every thing that is nasty †."

Holingshed, who lived in Queen Elizabeth's reign, gives a very curious account of the plain, or rather rude way of living of the preceding generation. There scarcely was a chimney to the houses, even in considerable towns. The fire was kindled by the wall, and the smoke sought its way out at the roof, or door, or windows; The houses were nothing but watling, plastered over with clay: The people slept on straw pallets, and had a good round log under their head for a pillow; and almost all the furniture and utensils were of wood ‡. Such representations, however well authenticated, seem hardly credible in these times.

---

* Statistical Account of Scotland, Parish of Fortingall, Vol. II. p. 458.

† Erasmus, Epist. 432.

‡ See Hume's History of England, Vol. IV. p. 449.; and Note S. at the end of that Volume.

2. Education.

There is perhaps no subject that has been more completely discussed than that of education; not only has every particular connected with it been frequently considered, but it has been treated of by such able men, as a Locke, a Milton, a Rousseau, a Helvetius, a Chesterfield, and many other distinguished authors, who have anticipated almost every idea *in a moral point of view*, including politeness of behaviour, that could be brought forward regarding it; and in various other publications, *the physical part of education* has been ably explained *. Little, therefore, remains to be done, but to give some general views of the doctrines which have been already promulgated, intermingled with such observations as may have occurred to the author, in consequence of his own personal experience in the management of a numerous family.

The importance of education, both physical and moral, cannot be estimated too highly. The future health and happiness of every individual must, in a great measure, depend upon it. At the same time, it is not to be wondered at, that so few should be completely educated. Consider, for a moment, how many years must elapse before the helpless infant reaches maturity; how many various particulars must be adverted to, and how the attention of the parents must be distracted, when they have a numerous family to bring up. These difficulties must embarrass even those who possess independent fortunes; but they must press, with painful severity, upon persons who are placed in moderate circumstances, and still more upon such as are compelled, from the profits of their daily labour, to maintain themselves and their families.

---

* See les Œuvres de Pierre Camper, edit. 1803 ,Vol. III. p. 223, where he writes an essay, in answer to the question publicly proposed, regarding the rules the most proper for the education of children, and the most likely to preserve man in good health, and to enable him to reach a great age. See also Buchan's Domestic Medicine, Chap. I.

In considering the subject of education in general, without alluding to particular professions or situations in life, I think it may be treated of under the following heads: 1. Food. 2. Clothing. 3. Air. 4. Exercise. 5. Amusements. 6. Habits. 7. Health. 8. Personal appearance and behaviour. 9. Mental information. And, 10. Moral and religious instruction.

A few cursory observations on each of these heads, is all that the limits of this work will admit of.

1. The subject of diet will require to be particularly discussed in a subsequent part of this work, so that it is unnecessary to dwell much upon it at present. It may be sufficient to remark, that too much stress seems in general to be laid upon the necessity of the child being nursed by the mother. Where that can be effected, it certainly ought to be preferred; but where any circumstance renders it either inconvenient or impracticable, the milk of any other healthy woman must be equally nourishing; nor can it well be doubted, that the milk of a nurse, living on a plain diet, and having nothing but an infant to attend to, must be more wholesome, and better calculated to rear a healthy child, than if it were nourished on the milk of its own mother, if her mode of living was either luxurious or irregular, or if her attention were distracted by a number of other avocations *. In many cases it is attempted to rear children, not

---

* The ingenious author of the Manual of Health, p. 273. has given us some judicious observations on this subject. He remarks, " that suckling, if

by the milk of a nurse, but by the spoon. This system, however, cannot possibly be recommended; and the most fatal consequences have resulted from it, wherever it has been tried to any extent. Where the experiment has been made, Camper observes, that the milk of goats has been found the best substitute for that of women; a circumstance not generally known, and which it is proper, therefore, to mention *.

When milk becomes no longer necessary, there is no food more wholesome than boiled oatmeal, with milk or small-beer; the meal, however, ought to be properly prepared, as is almost uniformly the case in Scotland; that is, the grain ought first to be thoroughly dried in a kiln, it ought then to be cleared from the husk, and, lastly, ground into meal. The flour of wheat or barley, if previously dried in the same way, and cleared from the husk, would probably be equally wholesome; but the skin has no nourishment in it, (in barley it is even noxious,) and grain, which is first dried, and then boiled, is peculiarly wholesome †. If panada

---

if accompanied by weakness, or want of appetite, is attended by the risk of bringing on the tubercular inflammation. Yet, whether it be that novel writers and poets, with the whole race of sentimental penmen, who seem, as it were *ex officio*, ignorant of the human economy, though none are more forward to give directions respecting it, have succeeded in their pernicious efforts to stir up the tender affections against the health,—as if it were not of greater importance, that a mother should preserve herself for her child, than give it the breast for a few months,—we do not always prevail by our endeavours to put a stop to this practice, where it is most hurtful."

* West India goats, are easily fed, have no rank smell, give much milk, and the flesh of the ewe-goat, when properly fattened, is not much inferior to mutton; they seem to be a race of animals that ought to be propagated in this country.

† It is proper, at the sametime, to remark, that flour of wheat is binding, and the meal of oats is laxative. Each, therefore, may answer best in different circumstances.

da is used, it is better made of biscuit, than fermented bread.

As children advance in years, their diet must be more nourishing, but ought always to be simple. Camper agrees with Plato in preferring, for the children of the rich, roasted meat to boiled. It is singular that he should condemn potatoes as food, more especially for children. Owing to their viscidity, he considers them as indigestible, and he quotes Boerhaave in support of that opinion. But it is probable that the potatoes of Holland are not of a meally sort, but glutinous, and consequently difficult to digest. He particularly recommends, however, on the authority of Xenophon and Lord Bacon, the eating of water-cresses, (cresson alenois, the *nasturtium aquaticum,*) the use of which, he affirms is one of the best means of preventing putrefactions, whether of the fluids or solids *. It is also one of the best remedies against the scurvy, to which we are all more or less liable, even in our youth.

In regard to wine, he thinks that it should not be given to children but once a-day, after dinner, and then, in small quantities. Hippocrates allowed wine to young people; but Plato, on the contrary, thought they should not taste it till they were eighteen years of age.

2. Clothing must also be treated of in a subsequent part of this work; it is only necessary, therefore, to remark, in this place, that it cannot be too simple. The great rule to be observed is this, that a child should have as many clothes as are necessary to keep it warm, and that they be quite

---

* An eminent physician, however, states, that the daily use of this herb is only fit for strong stomachs. In others it occasions flatulences and eructation, and sometimes heartburn.

easy for its body. Hardiness, properly, does not consist in going thin clothed, but in being able, well clothed, to stand any weather. The croup, that disease so fatal to children, is principally, if not altogether owing to thin clothing *.

3. Pure air is more essential to children than even to grown people. The tenderer the organs, the more sensibly they must be affected by any defect in so essential a requisite of life. In warm countries, fewer children perish, because they are constantly out of doors; and in cold countries, those children are the healthiest, who are the most commonly in the open air. Indeed, being hardily reared, in this respect, lays an admirable foundation of future strength and vigour. Those, for instance, who, when young, have constantly breathed the pure atmosphere of the mountains of Wales, of Scotland, or of Ireland, never fail to experience afterwards, even when they are exposed to the dangers of an unwholesome atmosphere, the advantages of this early treatment. They resist better the impression of the elements; they are less liable to be attacked by the gout, and other chronic disorders; and they enjoy health, whilst persons of the same age, differently bred up, are the martyrs of disease †.

4.

---

* The celebrated John Hunter, gave the following receipt for rearing healthy and strong children. "Give children, from their birth, plenty of "milk, plenty of sleep, and plenty of flannel." The young of other animals are well protected from cold.

† Parents often err, however, by exposing their children to cold, and bathing them in cold seasons of the year, with a view of *hardening* them. This should never be attempted, without great precautions in regard to clothing. The young of all animals delight in warmth. To fatten cattle and poultry, we must keep them warm.

4. An early attention to exercise, as a branch of physical education, cannot be too strongly recommended [*]. The ancients, it is well known, considered what they called the Gymnastic arts as one of the most essential branches of education. It would be in vain, however, to attempt, in this place, to explain a subject, on which so many volumes have been written [†], and the nature and advantages of which must be discussed in a subsequent part of this Work.

There is one point, at the same time, which it is proper to take notice of in this place. Milton, in his "Tractate on "Education," justly observes, that the training up of youth cannot be considered as complete and generous, unless it fits a man to perform justly, skilfully, and magnanimously, all the offices, both private and public, of peace and war. On these principles, I consider it essential that boys should be trained up to military exercises. Even girls are the better to be taught how to march. It makes them erect in their posture, and teaches them how to balance their bodies properly, when either walking or dancing. It also opens their chest, and improves their shape and appearance In regard to military exercise for boys, not only marching, but learning the use of the musket is so essential, in these critical times, with a view of keeping up the military spirit of the nation, that it ought to be enforced by legislative authority, and every boy at school taught how to protect himself, and how to defend his country.

---

[*] Dr Beddoes, in his valuable Treatise on Consumptions, attributes them so much to inactivity, that exercise, properly managed, it cannot be doubted, would frequently prevent that fatal disorder, to which the natives of these kingdoms are so peculiarly liable. P. 117-125.

[†] See, in particular, Gymnastics for Youth, or a Guide to Healthful and Amusing Exercises, for the use of Schools, by C. G. Saltzman, translated from the German. Printed at London, in one vol. 8vo. a work of considerable merit.

5. A numerous family, under a regular system of management, is a great source of pleasure to their parents, and renders them totally independent of other people, either for society or amusement; for, with such a family, it is in their power to have a ball, a concert, or a little theatrical representation, whenever they wish for it; and, when they have leisure, there are other of their little amusements in which they can occasionally partake. Swift recommends running up and down stairs as an excellent exercise. He would have found it not only wholesome, but amusing, had he had a number of fine children to have joined him in the recreation.

It is both a pleasant and an useful plan, to have little dances, and other entertainments, for young people and their companions, provided regular hours are kept, without which they are highly prejudicial. Such meetings not only amuse the children, but teach them a politeness of behaviour, and a self-possession in a crowd, which is of great advantage to them in after-life. It also lays the foundation of future acquaintance and connexions, which may be of service.

6. It is of great importance to teach children useful habits when they are young *. They ought to be taught early great

---

* Children, when very young, get into a habit of eating their food too quickly, particularly fruit, and other substances of which they are fond. To prevent their acquiring this habit, amusing devices might be employed, as cutting a pear, an apple, a piece of cake, or any other article of the same sort, into a number of pieces, arranging them in lines like an army, with one as an officer in the centre, and telling them, that the

great cleanliness of person; to pay particular attention to their teeth; to wash their eyes in cold water; to rise early; and other useful practices [*].

7. Aristotle well observes, that an elegant person is preferable to many letters of recommendation. It is incumbent, therefore, upon parents, to prevent, if possible, any personal defects with which they are threatened. Every endeavour, for instance, should be made use of to correct the habit of squinting, or any other defect likely to render their external appearance less agreeable. Care, however, must be taken not to injure the health, for the purpose of obtaining any imaginary beauty, as a small waist, or the like [†]. In regard to the behaviour of children, I have found it, on proper occasions, of great service, to introduce them to strangers at home, as it prevents their being shy or awkward in company; their little innocent or sprightly remarks are amusing; the little dances they may exhibit are interesting; and, on the whole, their presence adds to the pleasure of the entertainment, in the opinion of the most fastidious [‡].

8. To be early instructed in the means of preserving health, and of guarding against the various dangers to which individuals

---

the whole army must be devoured, *piece by piece*, and in a regular manner! This interests little children so much, that they soon prefer it to a more speedy mode of consumption.

[*] See Lord Bacon's Observations of Custom and Education, Essay fortieth, where there are many excellent hints upon this subject.

[†] On Shape-mending. See Manual of Health, p. 402.

[‡] On the important subject of politeness of behaviour, I know no work so likely to be useful, as, "The Elements of Polite Education," compiled from Lord Chesterfield's Letters, by the Rev. Dr Gregory.—Printed at London, in one vol. 8vo. anno 1800.

individuals are exposed, and to know how to act when any unfortunate accident happens, is a most essential branch of education which has hitherto been too much neglected. This subject has been lately taken up by an intelligent German author, who, in his Catechism of Health *, has pointed out the various particulars connected with their preservation and health, in which children ought to be instructed; and which contains information which every individual would find useful in his progress through life. Some work of the same description, better adapted to the manners and mode of living of the inhabitants of this country, would be a most useful publication, a knowledge of which ought to be disseminated throughout all our public seminaries.

9. Philosophers differ as to the ages when the instruction of youth should begin. Quintilian recommends three years, Plato six, Aristotle seven, and Chrysippus, on the other hand, asserts, that parents may instruct their children at all ages. Aristotle justly observes, that nothing can be more reprehensible, than to exact too much from children, at any age, for great fatigue of body must injure the mind, and too great exertions of the mind are prejudicial to the body †.

The

---

* See the Catechism of Health, selected and translated from the German of Dr Faust, printed at Edinburgh, anno 1797.

† The following observations, transmitted to me by a respectable friend, upon this interesting subject, merit particular attention. "As far as regards health, I think the modern system of education, which is made to commence almost with infancy, extremely reprehensible. I do not say that the human faculties are incapable of exercise at a very early period; but, I apprehend, they may be exercised, perfectly consistent with health, in a manner even more useful than in book-learning. You, Sir, who know so much of agriculture and rural affairs, need not be informed, that our common clowns sometimes possess more useful knowledge than our philosophers;

The studies of children ought to be directed in such a manner, as not to disgust them, or to make them abandon them ultimately. They should be made, as much as possible,

---

philosophers; and that Homer and Pindar do not contain all that is requisite for man to know. I see a remarkable difference between children educated in the metropolis, and in the country. The former, though they may have read more books, are yet more deplorably ignorant than the latter; they know nothing of the growth and progress of the commonest vegetables, and still less of the animal creation. The contemptuous term of *Cockneys*, which is applied to them, I apprehend to be expressive of their ignorance in every thing beyond the precincts of the kitchen; and I certainly would rather that my son should be guilty of a false quantity, in reading a Greek or Latin poet, than ignorant of those subjects in which all mankind are interested.

" The education of the body does not, however, preclude that of the mind; and, if people are not in too great a hurry, there is time enough for both. The *præcox ingenium* I have seldom found answered by maturity; and the powers of the mind are generally, in those cases, overpowered by a debilitated and exhausted body. When the bones and cartilages are soft, the sinews unstrung, the whole body a fasciculus of blood vessels, and in a growing state, then, pure air, and almost constant exercise, is required, to give, by action, stability to the frame. Providence, in the unerring dispensation of nature, has pointed this out; for young persons can scarcely endure a state of bodily inactivity. They should range among the woods and fields, be encouraged in active sports; and, as I before observed, there are many ideas to be gained without the aid of books. At least I would deprecate strongly too much restraint. My own youth, till 15, was spent in fishing, hunting, and field sports. At that period, I could not correctly spell my own language, knew little of Latin, nothing of French, or Greek, or mathematics; but between that age and 20, I found time, (and under great disadvantages), to acquire a mass of knowledge equal to that of most of my age; and to the wild tenor of my youth I ascribe, in a great measure, the vigorous constitution I now enjoy, and I now can, I believe, bear a sedentary life much better, because my early years were not sedentary; perhaps, indeed, my mind is more vigorous for it as well as my body; besides that, having a fondness for study, my attachment to it, at a time of life when young people are too apt to fancy they have attained sufficient, kept me, I believe, out of vice. What is learned also, at rather an advanced period is better learned.

" There is, however, one reason for exacting some application from young people, but not in the very tender years: and that is, to prevent them from contracting idle habits. For this reason, the indolent should always ble, a source of amusement, and never considered as a burdensome task. It is of use to make them recite their lessons with a loud voice, and to get many of them by heart.

To what extent the memory should be exercised, at the same time, is a point of great importance. It is certainly right, where a youth has naturally a good memory, to give it ample occupation; but to force it too much, weakens the intellectual faculties, and injures the health. It is better to exercise the talents and judgment than to overload the memory.

Among the various branches of knowledge to be acquired in youth, that of arithmetic is one of the most important, and it ought to be more attended to than is generally the case. Indeed, unless children are accustomed to figures at a pretty early period of life, they take a dislike to the study, and a prejudice against all professions where arithmetic is necessary; whereas, in every situation in life, a knowledge of this useful science is essential.

It is highly proper, when children are a little advanced in life, to accustom them to repeat speeches, and to make them read them aloud, one after the other. To read aloud, some instructive work like the Spectator, &c. is an excellent practice, both for young and old, and a wholesome exercise. In this way, they are accustomed to it early; any prejudice against it is removed; and much useful knowledge may be disseminated in a family.

---

always be compelled to either some bodily or mental exertion. Neither am I arguing that no moral coertion should be used, or that habits of order, obedience, and regularity, should not be enforced. But, indeed, Sir, the modern system, from the confinement of the nursery, where miss or master must not venture abroad, for fear of soiling their frocks, or falling into a ditch, to the confinement of the infant seminary, where they learn many things to be afterwards unlearned, or at least forgotten, is utterly subversive of health and vigour, and is calculated gradually to enervate the hardy British race."

As children must often be admitted to new privileges in the family, as breakfasting in the parlour with their parents, dining, or drinking tea there, &c. &c. I have found it a good rule, to put them, for a month before the privilege is given, "*in a state of probation,*" insisting on their acquiring, in the interim, some personal accomplishment, as a good carriage, &c. I am persuaded that much may be effected in carrying on the education of children by means of such arts, which are infinitely preferable to harshness or severity.

With a numerous family, it is necessary to have classes for spelling, writing, arithmetic, geography, &c.; and the giving of little premiums to those who excel has been found extremely useful. They generally get them according to their years; but still, the apprehension of losing a place, and a little premium also, keeps up the diligence of the more elderly; whilst the hopes of an accidental higher premium, and of a better place, excites the diligence of the younger.

There is nothing more likely to be attended with beneficial consequences, than the plan of annually drawing up an account of the progress that has been made in the education of children. In such accounts, which ought to be subscribed by the children themselves, a summary ought to be given, of the progress they have made within the period of the year, the books they have read, the masters they have attended, &c. It would be difficult, however, where there is a very numerous family, to carry the plan universally into effect.

In regard to schools; I have no doubt that healthy boys ought to be sent to public schools, were it only for the purpose of giving them a knowledge of human nature, and preparing them for those scenes in which they must afterwards bustle*. As to girls, on the other hand, a private education

---

* A very intelligent correspondent has remarked, that the mode of instruction

is better, excepting for a year or two, previous to their being introduced into life. I have seldom seen a proper foundation laid at schools for girls, in regard to writing, spelling, arithmetic, music, dancing, and other essential accomplishments. At large schools, there are too many, for all, or almost any one, being properly attended to. The foundation should therefore be laid at home, under the eye of an affectionate parent. After that is accomplished, a public school may be of use, for one, or even two years, to complete the education thus founded, to excite emulation, to see more into the character of others, and to shake off a little of the rustic familiarity of family life.

10. There still remains that most important of all the branches of education, the improvement of the moral character, and the laying a proper foundation of religious principles.

It cannot be expected that so extensive a subject can be much dwelt upon in a work like the present, more especially as this is a particular that is very generally attended to, at least, in so far as regards the religious tenets of the country where any individual is born. In addition to these, the celebrated Helvetius has recommended *a moral Catechism*, and given an example of it, which, in many respects,

---

struction and discipline now pursued at our public schools is obsolete, and not adapted to the times. The boys are also too numerous, and their morals and health, therefore, cannot be properly taken care of. He considers, therefore, a private school, where there are from 30 to 50 boys, infinitely preferable. I approve of such a school, as preparatory to a larger one; and I am satisfied that the great public schools might, in various respects, be greatly improved. But with all their disadvantages, I am satisfied, that a boy, destined for active life, ought to have his classical education completed at them.

pects, is drawn up with ability[*]. This hint might be greatly improved upon, and is well entitled to the attention of those who interest themselves in the improvement of the rising generation[†]. The points most particularly to be inculcated on youthful minds are principally the following:—A strict regard to truth;—Fidelity to promises or engagements;—A horror at the violation of property, without which civilized society could not exist for a moment[‡];—Affection for their more immediate connexions, since, as Doctor Johnson remarks, relations are ready-made friends;—A warm attachment for the interest of the country where they reside;—And a deep conviction of the existence of a Deity, and the necessity of obeying his commands, as revealed in the Scriptures.

I have thus thrown together a few hasty observations on the subject of education, some of which are the result of the experience of one who has been blessed with a more numerous family than usually falls to the lot of literary men, (namely, thirteen children,) and he trusts they will furnish hints to others which they may improve upon, and

---

[*] See a Treatise on Man, a posthumous work by Helvetius, translated by Doctor Hooper, in 2 vols. 8vo. printed at London, anno 1777, Vol. II. p. 412.

[†] I would particularly recommend this to the attention of Mr Lindley Murray, of Doctor Mavor, of Mrs Edgeworth, of Madame Genlis, or of some other distinguished author who has written on education; or, let the religious and moral catechisms be combined, leaving out of the former all abstruse doctrines beyond the usual reach of youthful minds.

[‡] Helvetius justly remarks, that the preservation of property is the most sacred of all rights. If one could reap the harvest, where another had ploughed the land and sowed the seed, no man would plough or sow, and the whole country would be exposed to the horrors of famine. From the moment that any one can, with impunity, usurp the property of another, mankind return to the state of war, all society is dissolved, and men must fly from each other like lions and tygers, Vol. II. p. 415.

adapt to the peculiar circumstances in which they are placed.

3. OCCUPATIONS.

IT is impossible that any great community could exist without a great diversity of occupation or employment. One portion of the community must be devoted to the essential purposes of providing food, clothing, and shelter; others will be employed in the magistracy, and in the learned professions, at law, divinity, and medicine; others in defending the country, either by sea or land; others in foreign commerce; in the manufacture of various articles, calculated either for foreign or domestic consumption; and, lastly, others in the various professions connected with the luxury, the pleasures, and the refinement of a great empire.

In considering the subject of the various occupations usual in civilized society, more especially as connected with health and longevity, I think that they may, with propriety, be divided into the following classes: 1. The laborious in the country, or husbandmen; 2. The laborious in towns and villages, or the manufacturing class; 3. The laborious under ground, or the mining class; 4. The active by land, or the military class; 5. The active by sea; 6. The commercial class; 7. The voluptuous in towns; 8. The voluptuous in the country; 9. The studious or learned class; and, lastly, The political class. In one or other of these classes, or in their respective families and dependents, every individual in a great community, with the exception of the poor, whether settled or vagrant, must be included.

1. Without disparagement to the other classes of society,

that of the husbandman must be accounted the most important and essential, for without their industry in raising food, no political society could possibly be maintained. Their labours, therefore, must be accounted the basis on which the existence and prosperity of every political community must depend; and if, by their exertions, a sufficient quantity of wholesome provisions be raised, a state can hardly fail to prosper.

The situation of the husbandman has been represented as unfavourable to health and longevity. Engaged, it is said, in incessant toils, driven often from the extremity of heat to cold, exposed to all the inclemencies of the elements; these wear out the best constitutions; and extreme old age is more to be ascribed to uncommon strength of stamina, than to fine air and climate, otherwise the effects of these would be more equally felt *. Persons employed in agriculture, however, possess many advantages in point of health: The labour indeed is constant, but not in general so violent as either to exhaust the strength by over exertion, or to excite any weakening degree of discharge by perspiration. The variety of employment is also a favourable circumstance; the air they breathe is pure and uncontaminated by any noxious vapours; the diet is in general wholesome; the hours they keep are regular; the mind is in a great measure exempted from care and anxiety; and they are exposed to fewer temptations to vice than those who live in crowded society †.

---

* Statistical Account of Scotland, Parish of Bothwell, Vol. XVI. p. 302.

† See these particulars more fully enlarged upon, in a very ingenious essay on the preservation of the health of persons employed in agriculture, by Dr Falconer, printed separately, anno 1789, and also published in the 4th volume of the papers of the Bath Society. It is said, that a temperate gardener is, on the whole, the most healthy of all professions.

2. The manufacturing class are the next, in point of importance, to husbandmen; for food itself would be of little avail without the advantages which their labours produce, in particular, those of clothing and shelter. It is much to be regretted, that, amidst the variety of these manufactures, some of them must be unwholesome; and yet, unless persons were induced to enter into these professions, one half of the pleasures and comforts of life would be lost to the rest of the community. Measures, however, might certainly be thought of, by which this great source of human misery might be considerably diminished. For instance, wherever any machine could be invented that would answer the purpose of manual labour in any unwholesome profession, the use of such machine ought certainly to be promoted, by private assistance and public encouragement. Laws ought also to be enacted, (such as those in the cotton trade), by which the use of machinery, in any degree hurtful to the health and constitutions of the manufacturers, ought to be prohibited. It would be extremely desirable to publish works pointing out the means of using precautions, by which manufactures, necessarily unwholesome, may be carried on in a manner less prejudicial than otherwise must be the case. A work of this sort, *on the diseases of artificers*, was published by a respectable author above a century ago, and has since been translated into English; but though we have become the greatest manufacturing nation that ever existed, no work has since been written on the same interesting subject by any native of this country *. Those in-

---

* See Bern. Ramazzini, "*De Morbis Artificum Diatriba.*" Printed at Utrecht, anno 1703; translated by Dr James into English, and published anno 1746, under the title of, "a Dissertation on Endemial Diseases," by Fred. Hoffman, and a Treatise on the Diseases of Tradesmen, by B. Ramazzini.

dividuals who lose their health in occupations which are dangerous in themselves, but useful to society, ought to be maintained, in their old age, in a comfortable manner, either at the public expence, or induced, by means of friendly societies, to secure a proper provision to themselves *.

It has been much disputed, whether it is most expedient to have manufacturers collected in towns or great villages, or scattered over the country. Whatever may be the case in regard to profit, there can be no doubt in regard to health, that the latter plan is the most advantageous; and the happy effects which have resulted from it, both in the western parts of Yorkshire, and northern parts of Ireland, must render it desirable that such a system should be more generally extended.

3. The mining class certainly forms a most important and valuable body of the community, without whose aid, many branches of manufacture could not be carried on, and many of the comforts of life could not be enjoyed. There are some mines, as those of lead, which are certainly unwholesome, and the idea of working under ground is unnatural. But there are several instances of old age among miners †; and, when they are put on a proper system, they

---

Ramazzini. There are some general observations on the diseases of tradesmen, in Valangin on Diet, p. 64. and the Manual of Health, p. 128.

* Where a manufacture is highly prejudicial, as that of white lead (in which a healthy man is destroyed in three years), it would be a good regulation to employ none but condemned criminals in it, to whom a respite would be mercy.

† As John Taylor, a miner in Leadhills, Scotland, who lived to 132 years of age; and the old miner in Switzerland, whose body was dissected. A particular account of Taylor is given in Smellie's Phil. of Nat. Hist. Vol. I. p. 528.

are as strong and healthy as other men. It is well known, that the miners of Cornwall are remarkable for their strength, the *Cornish hug* having long been celebrated; and it appears, from the most undoubted authority, that the colliers of Alloa in Scotland, are as healthy as any description of people can well be *.

4. The military class are, in general, strong and healthy, more especially where they are kept under a proper system of discipline. Indeed, those soldiers who have survived the dangers of war are remarkable for long life. They are generally stout and vigorous men; and the regularity, to which surviving soldiers must have accustomed themselves, whilst the careless and disorderly drop off, the erect posture to which they have been trained, and being, of course, men well formed by nature, and habituated to march and walk well, (which familiarizes them to a natural and healthy exercise,) all combine in their favour †.

5. It has generally been supposed, that the life of seafaring people was unfavourable to health and longevity; but more accurate investigation has proved the contrary. The tables communicated from Greenwich Hospital are strongly in support of the idea, that the watery element is not unfriendly to the human frame, more especially if at-

---

* See Statistical Account of Scotland, Parish of Alloa, Vol. VIII. p. 619; out of 520 colliers, male and female, anno 1792, 56 were above 55 years of age.

† Dr Jackson's Observations on the Health of the Soldier will be detailed in Part III.—There are some useful observations on the same subject in the Military Mentor, printed in 2 vols. 8vo. anno 1804, Vol. I. Letter II. p. 6. See also Xenophon's Instructions for a General of Cavalry, printed by Smeeton, St Martin's Lane, London, anno 1802, 4to.

tention be paid to their health as they advance in years. Among the out-pensioners of Greenwich Hospital, there were, in 1802, twenty-three above eighty, and no less a number than ninety-six among the in-pensioners, making in all one hundred and three, out of four thousand nine hundred and nine individuals. Nor ought it to be omitted, that, by the improvements which have been made in the diet of seamen by the celebrated Cooke, the mortality on board of his ship was less than in the healthiest country that can be mentioned *.

6. The commercial class, where their strength and spirits are not destroyed by hazardous speculation, have strong claims to health and longevity. Their labour is not oppressive, and they have some leisure at command, which they can devote to air and exercise. Those who deal in retail commerce, compose a large proportion of that middling class of society, which are justly accounted not the least valuable of the whole community. They are in general educated, well informed, with obliging dispositions; and, when their business thrives, are likely to lead comfortable and happy lives. Indeed, as a merchant of the city of London once remarked, no other rank of the people knew so well in what true comfort consists.

7. The voluptuous in towns, or those who follow pleasure as their occupation, including also artists, actors, and all those who administer to the luxuries of a wealthy capital, are a numerous class in every wealthy country, and are seldom

---

* The means recommended in Dr Trotter's *Medicina Nautica* will be particularly mentioned in Part III. when the means of preserving the health of sailors are more particularly discussed.

seldom distinguished for health. Indeed, how can it be expected, that those who think of nothing but sensual enjoyments, and who would sacrifice any thing for the gratification of a moment, can be healthy, or can live long. Without dwelling on the diseases to which they are liable *, the irregularity of the hours they keep, and their unceasingly running after trifling objects, must be pernicious. They soon get into a weak and irritable state, and their life becomes a burden to themselves and others.

8. The voluptuous in the country, have great advantages over their town rivals, at least in point of health. Their pursuits, however, are not much more important. The exercise they take, though often too violent, hardens their frame, and gives them a robust and manly appearance; but those who, in their youth, have directed their attention almost exclusively to the pleasures of the chase, when they get old, have no resource but one, and in general fly to the bottle as their only means of consolation: This, if carried to excess, soon terminates their career.

9. The learned professions, and those who direct their attention to study, have seldom reached great longevity.

The

---

* The best work upon this subject is Tissot's Essai sur les Maladies des Gens du Monde. In regard to those who administer to the pleasures of the rich, I examined a singular book, called "The Thespian Dictionary, "or Dramatic Biography," printed in 1 vol. 8vo. anno 1805, where there are sketches of the lives of the principal dramatists, composers, managers, actors, and actresses of the united kingdom, amounting, in all, to about 700; and, of the whole number, there are only two distinguished by great age, namely, Charles Macklin, a native of Ireland, who lived to above 100, as some affirm, and Cervetto, a musician, probably a native of Italy, who was, it is said, 103 years of age. A sufficient proof how few persons of that description are remarkable for longevity.

The lawyers are not a long lived race. When well employed, they are overwhelmed with the business they are obliged to go through, and have little time to attend to exercise. The contentious and wrangling habits they acquire are not favourable to health. Some distinguished characters among them, as an Earl of Mansfield, a Lord Kames, and a few others, have lived long, but they have seldom gone beyond 80 years of age.

Physicians are not distinguished for longevity, at least in modern times. Hippocrates lived to the age of 104; and Galen, though originally of a weak habit of body, died in the 140th year of his age; but no modern instance can be produced of such length of life in any remarkable physician *. They certainly run some risks of infection in their attendance on the sick, live in a state of constant hurry, and have not a complete command of their time, being liable to be called out at unseasonable hours. It is difficult, however, to account for the shortness of their lives, unless on the supposition, that, knowing the imperfections of the human frame, they are alarmed with circumstances which more ignorant persons would think little of; or, that their minds are so much occupied with the means of curing diseases, that they neglect the means of preserving health and preventing malady.

Nor are the clergy so long lived, even those who reside in the country, as might be expected, considering the advantages which their situation furnishes. It is reported, that several who have lived as hermits, in deserts and uncultivated

---

* One of the oldest physicians in modern times, is the respectable Dr William Heberden, who died in the 91st year of his age, leaving some valuable commentaries behind him, on the history and cure of diseases; printed in one volume, 8vo. anno 1803. Sir John Pringle, and some others, have reached about 80 to 84 years.

tivated places, reached great age; but there are very few modern instances of the same sort. Many clergymen, undoubtedly, retain their health and faculties to a great age, but their profession is probably too inactive for great longevity *.

In regard to the studious or learned, in general they do not live so long in modern as in ancient times. The philosophers of Greece and Rome were not shut up in learned seminaries, but acquired their knowledge by travelling, and dispensed the knowledge they had acquired in gardens and public walks. Hence they led a more active life, which is always favourable to health and longevity. When men of letters, in modern times, live long, they seldom enjoy as vigorous a state of health as persons in the country, who think but little, and use much bodily exercise.

10. The last great division of people is the political class, an important body of men in all countries, but, in a free state, they also form a numerous class of the community. It is seldom that this description of men live long, unless they have sense enough to retire early from public business. Indeed, the first object they ought to have in view, as an artful politician once declared, is to secure a good retreat. Where the success of a statesman depends upon the mere pleasure of the prince, no situation can be more precarious. In the words of Wolsey,

> O how wretched
> Is that poor man that hangs on princes' favours;
> There is, betwixt that smile we would aspire to,
> That sweet aspect of princes, and our ruin,
> More pangs and fears than war or women have;

And

---

* I am informed, from the best authority, that, out of 1000 contributors to the fund for the benefit of the widows and children of the Scotch Clergy, about 29 die annually.

And when he falls, he falls like Lucifer,
Never to hope again *.

Nor is it much better where a political character relies on the bustle and intrigues of a popular assembly, and where he has the envy and malice of numerous rivals to contend with. There is hardly any of the passions, which, carried to an extreme, is more pernicious to the health than ambition. It keeps the mind in a perpetual state of irritation and disquiet; when successful, jealousy of the efforts of others preys upon the mind; when unfortunate, malice and revenge torment the unfortunate objects of their attack; and the mischief is, that people of that description are neither happy in power or out of it. In the one case, they are oppressed with business, and, in the other, they are miserable for want of employment.

In considering this general view of the occupations of man, it appears how much they are upon a footing with regard to the comforts of life, and the prospects of health and longevity. Hence, though persons may repine at their own lot, and wish that they were placed in a different situation, those who are in that envied state are perhaps anxious for a similar change, knowing the disadvantages of their own situation, and ignorant of the cares and miseries attached to others. What then remains to be done, but to be satisfied with the situation in which we are placed, and to be desirous of making it as comfortable and happy as circumstances will admit of.

---

* Shakespeare's Plays, Henry VIII. Act 3. Scene 3. This is not so much the case in a free, as in a despotic country. An offended Prince rarely forgives, but the leaders of parties or factions have their rises and their falls.

4. Marriage.

It is evident, that the happiness, and consequently the health, of every individual, must greatly depend upon the connubial connexion he forms. Whatever the gay libertine may think, marriage, when formed on proper principles, certainly yields superior joy, and more exquisite gratifications, than any loose or temporary connexion can produce. If contrasted, as it sometimes is, with friendship between two persons of the same sex, there can be no comparison; for friendship in marriage, is sweetened with more delicacy and tenderness, and is confirmed by dearer pledges, than can attend the closest male alliance *. Such, indeed, are the innumerable advantages, both public and private, resulting from this species of connexion, that the most distinguished statesmen have invariably maintained, that it ought to be, in a peculiar manner, favoured by the laws, as the best foundation of political strength, and of social happiness †.

The philosophic Buffon observes, that, after puberty, marriage is the proper state of man, and most consonant to his nature and circumstances ‡. In youth, says Bacon, wives are our mistresses, companions in middle age, and nurses when we get old, so that a man has always reasons in favour of matrimony §. But the author who has most fully dwelt

---

* See Fielding's Joseph Andrews, Chap. IV.

† Such was the respect paid to marriage at Athens, that all commanders, orators, and persons intrusted with any matter of public confidence, were obliged to be married men. The Roman laws against celibacy, during the Augustan age, were peculiarly severe.

‡ Vol. II. p. 422.

§ See Bacon's Works, Vol. III. p. 309. Essay VIII.—Of Marriage and Single Life.

dwelt upon this subject, is Hufeland *. He considers the marriage state as indispensably requisite for the moral perfection of mankind. He contends, that it prevents debilitating dissipation on the one hand, and cold and unnatural indifference on the other; that it moderates and regulates enjoyment, whilst it promotes domestic joy, which is the purest, the most uniform, and the least wasting of any; the best suited to physical as well as moral health; and the most likely to preserve the mind in that happy medium, which is the most favourable to longevity, It also lays the foundation, not only for the happiness of the present generation, but of the future; for it is the matrimonial union alone, that produces to the state well educated citizens, accustomed from their youth to regularity, and an observance of the duties they have to perform.

It is singular also, that by far the greatest proportion of those who have attained great age were married; and though sailors and soldiers have no particular inducement to enter into the connubial state, yet, out of a hundred and twenty-seven aged people, who are pensioners in the Hospitals of Greenwich and Kilmainham, there were only thirteen batchelors, whereas the remaining hundred and fourteen had been married men.

Marriages, however, are not to be indiscriminately approved of. To make them answer the purposes of health, and the other objects to be kept in view in the connubial state, there ought to be a parity of station, a similiarity of temper, and no material disproportion in point of age. It is owing to the want of some of these most essential requisites,

---

* He represents a batchelor as a mere egotist, restless, and unsteady; a prey to selfish humours and passions; and less interested for mankind and for his country, than for himself. But to this description there are many exceptions.

sites, that the married state proves so often the source of misery, instead of joy or comfort.

5. EXEMPTION FROM ACCIDENTS OR DISEASES; OR A FAVOURABLE RESULT FROM THEM.

AMONG the various adventitious circumstances favourable to health and longevity, independent of particular rules, that of escaping from the various accidents to which every individual is necessarily exposed, ought not to be omitted. Some persons are particularly fortunate in this respect, whilst others are perpetually meeting with accidents, sometimes owing to their own imprudence, but often where the greatest precaution is taken to guard against them.

A learned author has written a book expressly upon this subject, pointing out all the various dangers to which persons are exposed, and forming, indeed, a most formidable list *. There are in this work a number of useful observations, the most important of which will be taken notice of in Part II. where the means of remedying some of the most common accidents to which any person may be exposed are pointed out; and, though some precautions are certainly necessary, yet, if persons were to be perpetually on their guard against the 327 dangers which this author enumerates, life would indeed prove a miserable state of existence. It is better to run almost any risk, than to live in perpetual apprehension and terror.

It is proper, however, to observe, that being less exposed to a variety of accidents, is one of the principal advantages of

---

* Le Conservateur de la Santé, ou Avis sur les Dangers qu'il importe à chacun d'eviter, pour se conserver en bonne Santé, et prolonger sa Vie. Par M. Le Beque Presle, Docteur en Médecine, 1 tom. 8vo. imprimé à Yverdon, anno 1763.

of a retired and quiet life, and is one of the reasons why persons in that situation are so much distinguished for greater longevity.

I HAVE thus endeavoured to lay before the reader, some general observations on a variety of important subjects, without having had any idea, when this chapter was first begun, that it would have been necessary to have entered into so extensive a range of matter. But in one respect, I trust, the reader will be gratified. Where he wishes for further information, regarding any of the points therein mentioned, the volumes are pointed out, from which he will be furnished with the additional knowledge he may be desirous of acquiring.

CONCLUSION

OF

PART I.

ON THE LONGEVITY OF THE HUMAN SPECIES IN REMOTE AND EARLY AGES, AND REFLECTIONS ON THE SHORTNESS OF HUMAN LIFE IN MODERN TIMES.

IT is a question which has been the subject of much discussion, whether the primitive race of men surpassed the present, in point of health, strength, and longevity? And to what causes such a circumstance ought to be attributed? It is well known, that, since the days of Moses *, there has been, in these respects, no great variation, for he states, that from

---

* The ninetieth Psalm is entitled, "A prayer of Moses the man of "God."—In the 10th verse, it is said, "The days of our years are three-"score years and ten, and if, by reason of strength, they be fourscore "years, yet is their strength labour and sorrow, for it is soon cut off, "and we fly away."

from seventy to eighty years was then the usual period of human life, which differs not from the present extent of its duration; but in the same volume in which that truth is recorded, we read of a number of persons who lived far beyond that amount.

Some have contended, that the years ascribed to the ancient patriarchs were not solar, but lunar years, and consisting only of 30 instead of 365 days each; in which case, there would be nothing improbable in the duration of their lives, for even Methuselah, instead of 967, would only have lived about 80 solar years. That idea, however, is attended with an insurmountable difficulty, namely, the too rapid advance of the ages of puberty and manhood, insomuch, that some of the patriarchs must have had children at six or seven years of age.

Others have ingeniously contended, that the year, till the time of Abraham, consisted only of *three* months; that it was afterwards extended to eight; and that it was not till the time of Joseph that it was made to consist of twelve; and this idea is strengthened by a singular circumstance, that some of the eastern nations still reckon only three months to the year. If this were admitted, the age of Methuselah, the greatest on record, would be reduced to only 240 years, an age which is not impossible, as some men in modern times have nearly approached it *.

A respectable author, on the other hand, contends, that a great duration of life was essential after the creation and the deluge, but not at future periods when the world became more populous. Immediately after the creation, when

---

* This is the system of Hensler, with whose works I am not acquainted, but his doctrines are mentioned by Hufeland, Vol. I. p. 121.

the whole earth was to be peopled by one man and one woman, it was necessary that the age of the human species should be extended to a great length. But when that object was attained, the lessening of the common age of man to 70 or 80 years was a wise appointment, by means of which, the peopled world is kept at a convenient stay, neither too full nor too empty. Whereas, if the generality of men were to live to the age of Methuselah, every country would soon be overstocked with inhabitants, who would find it difficult to procure accommodation and subsistence*.

Without, however, pretending to explain, what can only be accounted for by conjecture, or by a reference to omnipotent power, we shall proceed to observe, that, whatever might be the duration of the life of man in the patriarchal ages, yet we have no reason to repine at its extent in these times.

That man should wish to preserve life, whilst he enjoys health and strength, is natural. Indeed, the formidable circumstances which attend death, are, in the present situation of mankind, absolutely requisite to the proper government of the world. The terrors of death are, in fact, the great guardians of life: They excite, in every individual, the desire of self-preservation, which is nature's first law: They reconcile him to bearing the distresses of life with patience: They prompt him to undergo its useful and necessary labours with alacrity; and they restrain him from many of those evil courses by which his safety would be endangered: They are, at the same time, the safeguards of society. If death were not dreaded and abhorred as it is by men; if capital punishments, which are the last resource of government, were of no influence to deter offenders, no public order could be preserved in the world *. But, however anxious we may be to enjoy our existence for some time, that is no reason why we should wish to preserve it always.

---

* Derham's Physico-theology, Vol. I. p. 261.

The first ground of consolation for the shortness of our life is, that death is inevitable, and that it is an event as much to be expected, as that leaves should fall in autumn, or the fruit should drop from the tree when it is fully ripe. All who have gone before us have submitted to the stroke of death; all who are to come after us must undergo the same fate. The great and the good, the prince and the peasant, the renowned and the obscure, travel alike the road which leads to the grave.

Indeed, when the muscles lose their tone, when the head shakes, the hands tremble, the legs totter, the sensibility of the nerves decreases, and every sense is blunted, what is the use of life? Existence surely, in such a state, can be no longer accounted desirable, or worth a moment's thought †.

It is also to be considered, that, in advanced years, we have less enjoyment, of almost every description, than when we were in the vigour of youth: and, after having tried, what are commonly considered to be the pleasures of life, and finding them all vain and unsubstantial, we may be the less reluctant to part with them.

Not

---

* Blair's Sermons, Vol. II. p. 218.

† Shakspeare, in "As you like it," Act 2. Scene 7. has given a beautiful description of the progress of human life, beginning with the celebrated line, so often quoted, "All the world's a stage," &c.; and Solomon, (Ecclesiastes, chap. xii. v. 1—7.) has drawn up an allegorical description of old age, which has been happily illustrated by Doctor Mead, and commented on at greater length by Smith, in his Portraiture of Old Age.

Not only have we less personal enjoyment ourselves, but we become a burden upon our friends. We are unable to provide for our own subsistence, and others must labour for that purpose. We become fretful and impatient; and the mind often becomes more distorted than the body.

Nor is this all. If we live to a great age, all the friends of our youth have probably gone before us, and we are unwilling, or unable, to form new connexions. The manners, the ideas, perhaps the very language of our youth, have undergone material alterations, and we are disinclined to go with the tide *. In short, we become solitary, singular, and burdensome beings, in the midst of a crowd, bustling about other matters, and indifferent about our complaints. Is it then wonderful, that, when an old woman (Mary Campbell) was asked, at the desire of the author of this work, whether she wished to live any longer, her answer should be, "*Not a moment* †."

The best consolation certainly is, when a person can review a long and well spent life, and can part with it without reluctance, in the hope of enjoying, in another and a better world, those scenes of happiness, which could not be expected in this imperfect state of existence.

---

[*] Alexander, (Jerome) a cardinal, made his own epitaph, which shews that he was not displeased with his destiny. It consists of two Greek verses, which signify that he died willingly, because he ceased to be witness of several things, the sight of which was more insupportable than death. Such would be the disposition of all men, if reflection, if reason, if good sense, were capable of surmounting the mechanical impressions that made us in love with life. See Bayle's Dict. *voce* Alexander (Jerome).

[†] The Author has collected several instances of great longevity in Scotland, the particulars of which will be printed in the Code of Longevity, Vol. II. The state to which some of these individuals were reduced, makes the idea of a prolonged state of existence an object not very desirable.

PART II.

ON THE RULES FOR THE PRESERVATION OF HEALTH,

AND

THE ATTAINMENT OF LONGEVITY.

INTRODUCTION.

ON THE ADVANTAGES TO BE DERIVED FROM THE OBSERVANCE OF RULES CALCULATED FOR THE PRESERVATION OF HEALTH; AND THE CIRCUMSTANCES WHICH RENDER AN ATTENTION TO RULES SO FREQUENTLY INEFFECTUAL.

IT has already been observed, in a former part of this work *, that, if men lived uniformly in a healthy climate, were possessed of strong and vigorous frames, were descended from healthy parents, were educated in a hardy and active manner, were possessed of excellent natural dispositions, were placed in comfortable situations in life, were engaged only in healthy occupations, were happily connected in marriage, &c. &c. there would be little occasion for medical rules. But it is universally known, that some individuals enjoy only a part of these advantages, while others possess hardly any of them complete. Hence arises the necessity of

---

* See the Plan of the Work, p. 11.

of attending *to those rules*, which observation and experience have pointed out, as being the most likely to counteract the disadvantages arising from so material a want as any of the natural or adventitious circumstances above enumerated.

But we are told, that those who have lived long, have used no peculiar arts for the preservation of their bodies, (of which Parr and Jenkins are cited as examples), and that the duration of life has no dependence on manners or customs, or the qualities of particular food *.

This, however, is a mistake. Peasants, labourers, and other hard-working people, are placed in that situation where few rules are necessary, because their whole lives are a series of indispensable attention to air, to exercise, to moderation in regard to diet, drink, &c.; and not being much inclined to think intensely on any thing, they are not likely to employ much contemplation on the means of preserving health. But rules they do observe; and those which it is said old Parr recommended are remarkable for good sense. His advice was, " Keep your head cool by tempe-" rance; your feet warm by exercise; rise early, and go " soon to bed; and, if you are inclined to get fat, keep " your eyes open and your mouth shut." In other words, sleep little, and be moderate in diet; an excellent advice, more especially to those inclined to corpulency. It is more than probable, that others who have lived long had similar maxims which they also observed †.

---

* Buffon, Vol. II. p. 480.

† James Donald, an old man now living in Dunbartonshire, aged at least 93, and some imagine above 100, informed me, that he made it a rule to walk at least two miles every day, either out of doors, in good weather, or within, in bad.

It has also been asserted, that those who have paid particular attention to their health, and who are always talking and thinking of it, have never lived long, and, on the contrary, have led a miserable life, subject to perpetual terror and uneasiness, without deriving any advantage from it whatever. This assertion, however, has been rashly made, and is not founded in fact.

To those who entertain any doubts of the advantages to be derived from the observance of any particular system, I beg to refer to the precepts and to the practice of Plutarch. His rules for the preservation of health are excellent [*]; and, by observing them, he maintained, to a greater age than is usually the case, both his bodily strength and his mental faculties unimpaired.

The celebrated Galen is a still stronger proof of the advantages of a regular plan. He was born with an infirm constitution, and afflicted in his youth with many and severe illnesses; but having arrived at the twenty-eighth year of his age, and finding that there were sure rules for preserving health, he observed them so carefully, that he never laboured under any distemper from that time, except, occasionally, a slight feverish complaint for a single day, owing to the fatigue which attending the sick necessarily brought upon him [†]. By these means, he reached the astonishing age of one hundred and forty years. His advice to those who might read his works on health, cannot be too strongly recommended. " I beseech all persons, " (says he), who shall read this work, not to degrade them- " selves to a level with the brutes, or the rabble, by grati- " fying their sloth, or by eating and drinking promiscuously " whatever pleases their palates, or by indulging their ap- " petites of every kind. But whether they understand " physic or not, let them consult their reason, and observe " what agrees, and what does not agree with them, that, " like wise men, they may adhere to the use of such things " as conduce to their health, and forbear every thing which, " by their own experience, they find to do them hurt; *and* " *let them be assured, that, by a diligent observation and prac-* " *tice of this rule, they may enjoy a good share of health, and* " *seldom stand in need of physic or physicians*."

---

[*] His Treatise upon this subject is printed entire in the Code of Longevity, Vol. II. p. 105.

[†] De Sanit. Tuend. lib. 5. c. 2. See also Mackenzie on Health, p. 167. It appears from Volney's account of the self-denial practised by the American Indians, with a view to the preservation of vigour, that they agree in that respect with the ancient Germans, as represented by Tacitus, and that even savages have their rules.

It is justly observed, that a life "*of firm health cannot reasonably be expected, unless it be secured by attention or forbearance.*" Manual of Health, p. 12.

Cornaro is another memorable example of the efficacy of rules. Reduced, when he had entered the fortieth year of his age, to the very gates of death, and in a manner given up by his physicians, nothing but a regular system, strictly adhered to, could have saved him. His rules, to the extreme to which he carried them, are certainly but little calculated for general adoption. They have established, however, some important truths, in particular, that little sustenance, indeed so small a quantity as 12 ounces of solid and 16 ounces of liquid food, is sufficient to preserve the health and existence of an old man, living in a retired and quiet manner, and not obliged to take much fatigue or exercise; and that, by great care, a tendency to passion, which is often so fatal to aged people, may be subdued.

A respectable prelate, Cardinal de Salis, archbishop of Seville, who died anno 1785, at the advanced age of 110 years, is another instance of the advantage to be derived from rules. When asked, what system he observed, he used to tell his friends, "By being old when I was young, "I find myself young now I am old [*]. I led a sober and "studious, but not a lazy or sedentary life. My diet was "sparing, though delicate; my liquors, the best wines of "Xerez and La Mancha, of which I never exceeded a pint "at any meal, except in cold weather, when I allowed my- "self a third more. I rode or walked every day, except "in rainy weather, when I exercised, within doors, for a "couple of hours. So far I took care of the body; and, as "to the mind, I endeavoured to preserve it in due temper, "by a scrupulous obedience to the divine commands. By "these innocent means, I have arrived at the age of a pa- "tiarch, with less injury to my health and constitution, "than many experience at forty [†]."

These, and other facts of a similar nature, which might be adduced, are sufficient proofs of the efficacy of rules.—Let us next endeavour to explain, why attention to health is not oftener of service than it has hitherto generally proved.

1. People seldom attend to health till it be too late [‡].—They never think of it till it be lost.—When they get

---

[*] How ably has Shakspeare described the healthy old man.

Though I look old, yet I am strong and lusty,
For in my youth I never did apply
Hot and rebellious liquors in my blood;
Nor did not, with unbashful forehead, woo
The means of weakness and debility;
Therefore my age is as a lusty winter,
Frostly, but kindly.
As you like it.—Act 2. Scene 3.

[†] See Easton on Longevity, p. 203.

[‡] An ingenious friend of mine has thus described how difficult it is to prevail on the world, in general, to attend to health. The epicure and glutton

feeble, then they wish to get strong.—When they are diseased, they wish to become healthy.—But when the constitution is broken, and the frame is hastening to dissolution, when death knocks at the portal, is it then the proper time to expect the renovation of youth?—No!—The foundation should be laid early; the plan or system should begin in youth, and ought afterwards to be resolutely persevered in. Then the happy effects of it may be expected in a healthy and comfortable old age *.

2. Much more might be expected from even the late and dilatory attention paid to this subject, if a proper plan were pursued. But, though so many volumes have been written upon it, and several of them with considerable ability, yet no complete code has hitherto been published; nor has any permanent standard been made known. The consequence of which is, that people do not know where to go. It is impossible for them to peruse the many hundred volumes which have been written on the subjects of health and longevity, or to judge in what respects the doctrines, therein suggested, are applicable to their own particular case. If a collection were made, (which is the object of the present undertaking), of all the facts and observations *the most essential*

---

glutton will not forgo his turtle, venison, and high seasoned dishes, nor the drunkard his wine, gin, and brandy. The lazy will not become active, nor the sloven clean. The tradesman, manufacturer, and shopkeeper, cannot neglect his business for air or exercise; and, if it is the fashion to go half naked, nothing will induce men or women to put on flannel. In short, *original sin* must be entirely done away, and all its consequent vices and passions, before mankind will follow any code for the preservation of health and longevity.

* If we are to live wisely, says a great philosopher, (Adam Ferguson), for the sake of longevity, our system is doubly fortunate; the end is good, and the means are better. Even if we miss the end, we are happy in using the means.

sential for the preservation of health, more especially if these were condensed within a reasonable compass, it would then be in the power of each individual, to adopt those rules which were suited to his particular situation, and to ascertain how far they were likely to be effectual.

3. The means of preserving health, and attaining longevity, has not hitherto been made the peculiar study of the physician. Few of them have collected the books necessary to make themselves masters of that interesting subject, at least to the extent that might be necessary, nor are they, in general, to be met with in public libraries. The means of preserving health is no where taught, as a separate and most important branch of the medical art. Indeed, a professorship ought to be erected for the special purpose of making these rules known, not only to young physicians, but to youth in general. An attention to health, which ought, it has been justly remarked, to be a primary object in the education of children, is seldom considered as even a secondary one; while trifling accomplishments, of little importance in the pursuits of life, generally engross the attention of father, son, master, and scholar *.

4. When people get into a debilitated state, they are too apt, either to rely on their own skill †, or to fly for relief to ignorant and presumptuous quacks, instead of trusting to the counsels of men of reputation and of experience in the medical profession. What can be more preposterous? Can any thing be expected from such folly, excepting the pro-

---

* Philosophy of Medicine, Vol. V. p. 312.

† We learn from Paulus Jovius, that Alexander (Jerome) a celebrated Cardinal, who died *anno* 1542, ruined his health by the over care he took of

longation of disease, or a speedy dissolution? If the ablest physicians find it difficult to relieve their patients, when they see them daily, and can watch over the whole progress of the disease; how can these ignorant and bold pretenders cure a variety of disorders, by the same medicine, in the same dose, in thousands of individuals, whom they never saw, and whose ages, constitutions, complaints, situations in life, &c. are so widely different from each other? Medicine has been compared to a lottery, with a moderate number of prizes, even where the tickets are sold under legal authority; but in the case of quacks, it is a lottery where there is hardly a prize, and where, if one be obtained, it is not worth the asking after.

Some represent rules as troublesome, and account all persons as miserable, who live according to any regular system, or attend to such directions as have been recommended to them for the preservation of their health. But they will not take into their consideration, that, by practice and habit, the observance of rules becomes quite easy and familiar, and is attended with no trouble or inconvenience, nay, there is a pleasure, arising from the occupation which it furnishes to the mind, besides the advantages derived by the person.

But

---

of it, being a very bad physician to himself, and making use of too many unnecessary medicines. "He enjoyed," says Jovius, "the purple five years, and would undoubtedly have arrived at a good old age, if he had not, through too great solicitude to preserve his health, proved a mad and unsuccessful physician to himself, and corrupted his entrails by improper medicines." Paul. Jovius, Eleg. c. 98. p. 231. See Bayle's Dict. *voce* Alexander (Jerome).

The Italian Noble, who wrote the following epitaph, fell a sacrifice also to his own imprudence.—I was well—Would be better—Took physic—Died.—*Stavo ben—Ma per star meglio—Sto qui.*

But though a proper attention to health is certainly to be recommended*, yet that, like every thing else, may be carried to an extreme; and, as a recent author has justly observed, a fancied want of health, and a too solicitous attention to personal welfare, is one of the refinements of a luxurious age, when, by the diffusion of wealth, all apprehensions respecting the immediate means of subsistence, are

---

* There is hardly any paradox that has not been defended by some ingenious men; and, in some instances, they have actually convinced themselves of its truth. The celebrated Pascal, for instance, maintained the advantage of having a feeble constitution. He was accustomed to say, that he knew the danger of health, and the advantage of sickness; and when the people about him were afflicted to see him suffer so much pain, he cried, " Do not pity me: sickness is the natural state of Christians, " because they are then as they ought always to be, *viz.* in a suffering " condition; deprived of every blessing, and the several pleasures of the " senses; free from all passions, which disturb us during the whole course " of our lives; void of ambition and avarice, and waiting continually for " death. Ought not Christians to spend their lives in this manner? and " is it not *a great happiness for a man to find himself, through necessity, in the* " *state in which he is under an obligation to be; and that all he has to do is, to sub-* " *mit himself humbly and peaceably?* For this reason, all I desire to do is, " to beseech God to grant me that grace." Such was the temper with which he suffered all his evils*.

The celebrated Mrs Rowe entertained similar sentiments. When any of her acquaintance expressed to her the joy they felt at seeing her look so well, and possessed of so much health that it seemed to promise many years to come, she was wont to reply, " That it was the same as telling a " slave his fetters were like to be lasting; or complimenting him on " the strength of the walls of his dungeon." It is less to be wondered, therefore, that a modern author should undertake to *demonstrate* the advantages of a feeble constitution†.

* M. Perior, Vie de Pascal, p. 44.

† Les Avantages d'une Constitution Foible, par Fouquier de Maissemy, 8vo. Paris, 1802. La nature en refusant à l'homme foible une vigueur dangereuse, lui a épargné une foule de maux. Elle a adoucé ceux qu'elle ne pouvoit lui épargner. Elle a reculé les bornes de sa vie, et elle l'a elevé audessus des autres hommes autant par la perfection de ses sens, que par ses qualités morales.—Que lui faut-il de plus? Reconnoitre les avantages qui lui procure sa foiblesse. Je vais les demontrer.

removed from a considerable part of the community[*]. Hence the multitudes of hypochondriac and nervous people, who fill all the different watering places in the kingdom, whose complaints are commonly groundless, and who, by wishing to cure imaginary illness, often make themselves actually sick. To persons of that description, neither this, nor any other medical work can be of any service.

It may be said, that to lay down rules for the preservation of health, is a task which properly belongs to the medical profession, whose exclusive right it is to discuss such subjects. But why should that be the case? With the curing of disease it is not intended to meddle. That is the proper province of the physician. The preservation of health, however, and the prevention of disease, is a kind of neutral ground, between the several branches of medicine, and the common sense and daily observation of well informed men, and of course is open to every one.

Having premised these general observations, we shall now proceed to explain the rules which seem most essential for the preservation of health, under the general heads specified in the plan of the work already given[†]; and shall endeavour, not merely to state the rules, but also to assign the general grounds on which they are respectively founded.

---

[*] Buchan's Practical Treatise on Sea-Bathing, Preface, p. 5.

[†] See p. 22.

PART II.

CHAP. I.

ON THE NATURE OF AIR, ITS IMPORTANCE FOR THE PRESERVATION OF HEALTH AND ATTAINMENT OF LONGEVITY.

THE atmosphere, or that thin and subtile fluid by which this globe is surrounded, is perhaps the most extraordinary production in nature.

Though seemingly simple, yet it is a body composed of various substances, materially differing from each other: though, to all appearance, light and buoyant, yet it possesses a considerable degree of weight or specific gravity: and, though nothing can apparently be more unsubstantial, yet neither animal nor vegetable life can subsist without it.

In treating of this extensive subject, in so far as the same is in any degree connected with our present inquiries, we propose to consider, 1. The nature of the atmosphere in general, and the substances of which it consists. 2. Its transparency, weight, and the other mechanical properties which it possesses. 3. The qualities by which it is distinguished. 4. The circumstances which render breathing or respiration necessary for the sustenance of life; and, 5. The rules which ought to be observed as connected with that important function.

1. NATURE OF THE ATMOSPHERE.

IT is to modern chemistry that we are indebted for any accurate knowledge of the nature of the atmosphere, and of the most essential substances of which it consists. According to the latest discoveries upon that subject, it is composed, 1. Of respirable air. 2. Of a certain proportion of water. 3. Of carbonic acid gas; and, 4. Of various other substances with which it is not uniformly, but only occasionally mixed.

1. Respirable air forms by far the principal bulk or volume of the atmosphere; a matter of indispensable necessity, considering not only its great importance to animal and vegetable life, but its vast and perpetual consumption. The total quantity of air with which the globe is surrounded, weighs, according to calculation, about 11,911,163,227,258,181,818 lib. avoirdupois, about 98 parts of which consist of respirable air *.

The air we breathe has, till of late, been always accounted a simple element; but modern experiments have proved, that

---

* Thomson's Chemistry, 2d edit. Vol. III. p. 296.

that not only it is a compound body, but have also ascertained the two substances of which it consists; namely, 1. Pure or vital air; without which no animal can live, and which is also essential for vegetable life and for combustion; and, 2. Impure or mephitic air; for no animal or vegetable can live in it. The first is called, in the new chemical nomenclature, oxygen, or *oxygen gas;* and the second azote, or *azotic gas*[*].

Oxygen gas, or pure air, is that part of the atmosphere which is essential for supporting flame, and animal and vegetable life. If the whole atmosphere, however, consisted of so pure and stimulating a substance, animals, as at present constituted, could not long survive in it[†]. Hence it is necessary that it should be diluted with a much greater proportion of azotic gas, to make it answer the purposes of respiration. Indeed, it has been found by experiment, that animals confined in oxygen gas, die before the whole oxygen is exhausted, and much sooner than when confined in the same bulk of atmospheric air. The proportion of these gases varies accordingly, as they are measured or weighed, oxygen gas being heavier than azotic, in the proportion of 125 to 115.

---

[*] It is certainly more distinct to make *air* the generic term, and to give the fluid substances of which it consists, the name of *gases*. Oxygen is literally the substance which produces acids, from οξυς, sharp or acid, and γεινομαι, to beget; azote, on the other hand, or the air which takes away life, is derived from the Greek privative particle α, and ζωη, life.

[†] See Davy's Researches, &c. p. 453; also Thornton's Philosophy of Medicine, Vol. I. p. 433, where it is stated, that, in the use of *vital air*, the physician possesses a very powerful means of restoring health.

PROPORTION of the two gases found in common air, according to measure or weight, in 100 parts.

	By Measure.	By Weight.
Oxygen Gas, -	21	24
Azotic Gas, -	79	76
	100	100 *.

It is to be observed that, in all situations or parts of the globe, atmospheric air contains nearly the same proportions of these two gases or elastic fluids, mixed with other substances.

2. A certain portion of water is uniformly mixed with common air. The clouds and fogs which float in the atmosphere, and the rain and dew which fall from it, prove this beyond a doubt †. Nay, when the atmosphere seems to

---

* Mr Cavendish, more than twenty years ago, determined the quantity of oxygen in the atmosphere to be nearly $\frac{1}{5}$. By experiments made in 1799, with considerable care, upon specimens of air collected at Bristol, Clifton Hill, on the Severn, and some brought from the sea, near the coast of Guinea, Mr Davy had similar results; the proportion was the same in all $\frac{21}{100}$; and, with this estimation, the accounts of Humboldt and Gay Lussac, lately published, exactly coincide. They are inclined to think, that the proportion is

Oxygen,	0.210
Azote,	0.786
Carbonic acid,	0.004
	1.000

If there exists any hydrogen, it does not exceed 0.003. See Journal de Physique, de Chimie, &c. Tome LX. p. 99. An. 1805.

† The manner in which the air obtains a sufficient quantity of moisture by means of evaporation, which afterwards falls on the surface of the earth in the shape of rain, is one of the most important subjects in natural philosophy.

to be perfectly dry and transparent, water may be extracted from it by a variety of substances. Water, however, is not an ingredient essential for the existence of air in an elastic form, though a certain portion of it is necessary to render it fit to answer the different purposes for which it was intended, since very dry air is found to be extremely injurious to animal economy. The proportion of water varies from $\frac{1}{60}$ to $\frac{1}{100}$ part of the atmosphere; but in some cases, as in foggy weather, it must be much more. It may here be proper to observe, that the circulation of water, by being first drawn up into the air in a state of vapour, then formed into clouds, and again thrown upon the earth in the shape of rain, is one of the most important and most beneficial operations of nature, without which neither animals nor vegetables could exist *. Indeed, if it were not

---

losophy. It is well explained, in so far as experiments have hitherto been carried, in Thomson's Chemistry, Vol. III. p. 363. 364.

* It appears from Dr Hales's Experiments, and Bishop Watson's Chemical Essays, that vast quantities of water are continually discharged into the air by evaporation; and that the evaporation from the Mediterranean Sea alone, is sufficient to yield all the water of the rivers which run into it. Evaporation answers various important purposes:—1. The surface of the earth is thereby freed from superfluous moisture, and rendered fitter for producing those articles which are necessary for the sustenance of terrestrial animals: 2. In its ascent it purifies the air, and prevents too much dryness, which is unfavourable to health: 3. When it descends in the shape of rain, the air is also improved; for the rain brings down to the surface of the earth, all earthy and saline particles that it meets with, and thus promotes vegetation: and, lastly, this perpetual circulation of water promotes, in the greatest degree, all the most beneficial purposes of nature. By it vegetables are furnished with an article essential for their growth, and animals with a liquid necessary for their existence, and in various other respects, as for canals, driving machinery, &c. of the greatest utility. Let us consider, for a moment, what would be the consequence if this circulation of water did not take place. The rivers run into the sea, where their waters would become salt, and unfit for the purposes of drinking; and, without the circulation of water, as it now takes place, they would

for this constant circulation of water, the upper parts of our globe would be too arid, and the inferior too moist for the purposes of nature.

3. That singular fluid, known under the name of *carbonic acid gas*, is uniformly an ingredient of the atmosphere, at the greatest height hitherto accessible to man. The average proportion is $\frac{1}{100}$ part of the whole atmosphere, but it is often accumulated in much greater quantities, more especially in crowded rooms; for this fluid is perpetually forming in the bodies of men and other animals, and constantly expelled by the lungs. As this gas, in any quantity, is noxious to animals, and, if permitted to accumulate, would extinguish all inflammation, it would soon render the globe uninhabitable were it suffered to increase. But this gas is fortunately absorbed by vegetables as rapidly as it is formed; and, by a beautiful arrangement, the same article that is injurious to animal life, becomes the life of vegetation.

This, however, is a point so immediately connected with health, that it requires a more particular explanation.

The leaves of trees, it is well known, are essential for their nourishment and growth. By them a plant may either obtain food, or the food, which it otherwise obtains, may be improved in its properties. It is difficult to ascertain which is the case, in regard to the substances imbibed by leaves.

Among these substances, that of carbonic acid gas is unquestionably the most important. This gas, which by many

is

---

soon be exhausted. If attempts were made to stop them, the water, unless retained in large quantities, would become corrupt and noxious, whereas, by the circulation above described, a never failing source of pure water is provided by nature for the use of man.

is known under the name of *fixed air*, consists of *carbon*, or the basis of charcoal, and *oxygen*, or pure air. It is absorbed by the leaves during the day, and decomposed by the light and heat of the atmosphere. The carbon is retained, the accumulation of which occasions that quantity of charcoal with which trees abound; and the oxygen, or pure air, together with any superabundant moisture in the sap, is exhaled. In the night time, on the contrary, vegetables absorb the oxygen gas, and give out the carbonic acid.

This hypothesis accounts for circumstances otherwise inexplicable. It explains, 1. Why the air in the day should be wholesomer than that of the night; and, 2. Why, in the night time, the air of a great city is in some degree less noxious than that of the country, being less infected with the carbonic acid, which, at that period, plants are perpetually exhaling. Were it not for this circumstance, the late hours, so usual in London, and other large towns and cities, would be more destructive to health than at present.

4. In addition to common air, water, and carbonic acid, the atmosphere contains a variety of other substances, with which it is occasionally mixed. It may be proper briefly to enumerate them, which is all that the nature of this work will admit of. They may be arranged under the following general heads: 1. *Animal perspiration*,—This is an article of great extent and importance. The perspiration of a man is about $\frac{1}{34}$ part of an inch of fluid matter, all over the surface of his body, every 24 hours*, and, consequently, would amount to one inch in 34 days. The quantity, therefore, must be enormous in a populous country, and where a number of ani-

---

* Arbuthnot on Air, p. 11.

mals are maintained. 2. *Vegetable perspiration,*—The exhalation of vegetables must be very considerable, more especially in warm weather. It is calculated, at a medium, to amount to a whole inch in 161 days during summer, and consequently, the air of summer must be very different from that of winter. As the fragrant and volatile spirits of all vegetables float in the atmosphere, they must have very sensible effects upon the health of the people. Spicy odours are smelt at a great distance from the countries where they grow. 3. *Exhalations from the earth,*—In hot weather, the perspiration of the earth is visible, more especially when land has been recently ploughed. 4. *Exhalations from the water,*—Before a marshy country is drained, a peculiar substance, formerly called heavy inflammable air, and now *carbureted hydrogen gas,* arises spontaneously during hot weather, in considerable quantities, from the bottom of stagnant water, and infects the atmosphere, so as to occasion disease. 5. *Mineral exhalations,*—Sulphureous, and other mineral exhalations, arise from the earth in considerable quantities; and various fumes, of an oily, inflammable, noxious, and fetid nature, are emitted from the mines opened and wrought by the industry of man. Where this takes place in considerable quantities, it is highly pernicious to health. Sometimes sulphureous vapours infect the vegetables, and render the grass unwholesome to the cattle that feed upon it. 6. *Smoke,*—It is well known that the smoke of chimney fires, and the fumes which are raised by all fires, whether natural or artificial, are diffused throughout the air, and make up a part of that atmospheric air in which we breathe. 7. *Saline particles,*—Another ingredient of air consists of different saline particles, many of which are volatile, or soluble in air; and in other cases, the air either supplies salts as an ingredient, or produces them as an agent *. 8. *Dew*,—This deposition from the air is not mere water, but a composition of all the watery, volatile, oily, and saline vapours which exhale from the earth or the sea. As long as they are kept dissolved by the heat of the sun they are not visible; but, during the cold of the night, they fall to the surface of the earth in considerable quantities, differing according to the nature of the soil or waters from which they have been originally extracted †. 9. *Dust*,—Earth is another content of the air; in which it is mechanically suspended, principally by high winds: and the ashes of burning mountains are carried to great distances. 10. *Contagious matter*,—It is contended, by many authors, that either from invisible insects, or from some of the substances above enumerated, the air acquires a noxious quality, which produces various disorders, sometimes attacking the animal, sometimes the vegetable kingdom only, and sometimes both ‡. This is a point, however, which will afterwards require a more ample discussion. Lastly, *Heat*.—As this is an element which pervades all the universe, the atmosphere must contain its proportion of it §.

---

* In the neighbourhood of the sea, in particular, the air must be full of saline substances.

† Dew, properly speaking, is that moisture which falls during the absence of the sun, and without the necessary presence of clouds. As the solvent powers of air are always increased by increase of temperature, a greater quantity of all substances soluble in it are taken up during the day time, than the cold night air is capable of suspending, a portion of which must necessarily, therefore, be precipitated in the form of dew, water being the most abundant of them.

‡ Vegetables are more apt, than even animals, to be affected by these aerial attacks, having no means of escaping their influence.

§ It is a beautiful circumstance in the economy of nature, that the principal constituents of the atmosphere are found the same in all places where there are means of circulation, and of the action of winds. The oxygen absorbed

Such is the nature of the atmosphere we breathe; yet, notwithstanding so heterogeneous a mixture, it is still preserved in a wholesome state; though it must necessarily happen, that the air of particular seasons of the year, of particular places, or of countries in general, must differ materially, in proportion to the mixture of the different ingredients above enumerated *. The wholesomeness of air, however,

---

sorbed by animals, seems to be fully compensated by the production of this principle by vegetables. The carbonic acid, given out in respiration and other processes, is absorbed and decomposed by plants; a perfect equilibrium is thus preserved; and the great difference in the salubrity of the air, observed in different spots, depends upon other causes than a difference between the proportions of the oxygen and azote; probably on the relations of the air to heat, to moisture, and to the other ingredients in it above described.

* As the atmosphere is liable to so many impurities, it may be proper to consider what means nature has adopted for restoring it to a wholesome state, and rendering it fit for the respiration of animals. The following are the principal means which contribute to that important purpose. 1. The ascent of vapours, which, it is supposed, must carry many salts and putrid particles with them, to a certain height in the atmosphere. 2. The descent of vapours, in the shape of rain, snow, or hail, by which many impurities are brought back again to the surface of the earth. 3. Winds and hurricanes, by which the accumulation of all noxious articles in the air is prevented. 4. Explosions, by which inflammable air, and other noxious elastic fluids are destroyed. 5. Frosts, which stop the perspiration in the earth, and consequently deprive the air of many noxious exhalations, with which otherwise it might abound. Hence it has been found by experience, that pestilential disorders, arising from such noxious ingredients in the air, have been stopped by frost: on the other hand, in thaws, the season often becomes extremely unhealthy, the perspiration of the earth being restored, and its exhalations becoming extremely copious. This is particularly the case when thaw is attended with great heat, a circumstance which preceded the great plague in London. Frost also acts usefully by diminishing animal and vegetable putrefaction, and diminishing the solvent powers of the air, so that many extraneous matters are precipitated from it. 6. The agitation of water, whether in great bodies or in running streams, by which many putrid particles are absorbed. And, lastly, Vegetation, by which the noxious effects of respiration, combustion, and putrefaction, are counteracted,

however, and the advantages to be derived from it, must also depend upon the various properties which that possesses. It will next be proper, therefore, to explain what these are.

2. OF THE MECHANICAL AND OTHER USEFUL PROPERTIES OF THE ATMOSPHERE, AND THE EFFECTS THEREOF.

THE properties of air, and the advantages resulting therefrom, may be explained under the following general heads: It may be considered as a substance, 1. Transparent. 2. Fluid, and easily divisible. 3. Heavy. 4. Perpetually in motion; and, 5. Elastic, and compressible. It will appear, that, upon the possession of these properties, the health and comfort of human life must in a great measure depend.

1. *Transparent.*—Unless the air was a transparent body, we should lose all the advantages of light. Were it visible, we could not see other objects through it. What we see moving in a stream of light, let in by a small aperture into a room, is not air, but dust, and other bodies floating in it [*]. And though the sky, in clear weather, has a blue colour, yet it cannot be doubted that the air itself is altogether colourless and invisible. The blue colour of the sky is occasioned by the vapours which are always mixing with the air, and which have the property of reflecting the blue rays of the sun more copiously than any other [†].

2.

---

counteracted, and the asmosphere is constantly preserved in that state of purity, and of temperature, which is salutary both to animals and vegetables. See Arbuthnot on Air, &c.

[*] Arbuthnot's Essays on Air, p. 1.

[†] Thomson's System of Chemistry, Vol. III. p. 298.

2. *Fluid, and easily divisible.*—The fluidity of air is one of its most essential properties. This quality is absolutely essential to an element in which animals and vegetables grow, for neither could attain their proper shape, unless in a fluid, the pressure of which is equal upon every part of their surfaces. The injury done to the human frame, by the constant pressure of any hard body, is well known; and vegetables suffer in the same manner, when they are not entirely surrounded by that fluid in which they are destined to grow.

Were not the air, in consequence of its fluidity, easily divisible, animals could not move in it; or, if they did, the labour would soon exhaust their strength, and they would perish by fatigue. Water is an element above 800 times denser than air; and, in consequence of that density, can admit, support, and press together, bodies of much larger dimensions than the atmosphere; but, in consequence of that density, no animal can pass through it, unless of a peculiar shape, calculated for perforating it with greater facility; whereas air being more easily divisible, animals of various shapes can pass through it without difficulty *.

3. *Heavy.*—Though *as light as air* is an expression made use of in common conversation, yet there can be no doubt that it possesses considerable weight †; this appears from various experiments, but by none more distinctly than by

---

* It is owing, according to some authors, to the fluidity of air, and its being so easily divisible, that odours and other effluvia are propagated, and that sounds are so rapidly conveyed. But this cannot be admitted to the full extent.

† Sir George Shuckburgh has fixed the specific gravity of air to that of water, as 1 to 814.

the strong pressure upon the hand, when it is placed upon the mouth of a receiver, open at the top, in which a vacuum has been made by an air-pump. Travellers, in ascending high mountains, feel the want of this pressure to which they have been accustomed in the valley; for, as they ascend, they experience a total lassitude from the dilation of their vessels; and at last the blood begins to burst through the fine coats of the lungs, and they spit blood *. The gravity or weight of the atmosphere accomplishes many useful purposes in nature; and, in particular, prevents the blood-vessels of animals, and the sap-vessels of plants, from being too much distended by that expansive power which has a perpetual tendency to swell them out.

By means of this gravity, the atmosphere presses with great force upon all bodies, according to the extent of their surface. It has been calculated, that a middle sized man must sustain a weight of about 33,000 pounds, and by this enormous pressure, he would undoubtedly be crushed in a moment, if the pressure were not uniform, and if every part of the body were not filled with air, or some other elastic fluid, the spring of which is sufficient to counteract it †. At the same time, it is to be observed, that a change of weather, or an alteration in the weight of the air, which is speedily ascertained by the common barometer, does affect the health of the human species, more especially those who are in a delicate state ‡.

4.

---

* Thornton's Phil. of Medicine, Vol. I. p. 322.

† Since the internal spring is able to resist so great a pressure, it must be equal to it, and would infallibly tear the body to pieces if the air were much lighter. Even when its weight is but little diminished, inconveniences are felt from it.

‡ The ancients, it is said, were in a great measure unacquainted with the fact that the air is a ponderous body, and many of them considered it as

4. *Perpetually in motion.*—A fluid easily divisible, and liable to perpetual agitations, though possessed of considerable weight, must be constantly in motion. Heat or cold, the influence of the morning sun, or the return of night, rain descending from the clouds, or any other body moving through it, all tend to promote the circulation of this useful fluid. That is a fortunate circumstance, for the more a fluid of so heterogeneous a nature is driven about, the better, otherwise it might become corrupt and unfit for respiration.

It is owing to its weight and mobility, that the air is so highly servicable to the human species, in other respects besides respiration. Among other great effects resulting from those properties, to them may be attributed the advantages of navigation, by which the widest seas, instead of being an obstacle, facilitate, in fact, the intercourse of mankind. This arises from the force which the air attains when collected by a spreading and impervious sail, though it is easily divisible, when any thin or sharp body passes through it. By means of the strength or power of the air also, many useful machines are enabled to perform very important services to mankind.

5. *Elastic and compressible.*—One of the most important properties of air is its elasticity, by means of which, if compressed, it immediately dilates itself when the pressure is removed; owing to that property also, it is always expanding itself wherever there is a vacuum to which it can have access. Hence, the air is able to insinuate itself into all

---

as a substance endowed with absolute levity. See Gregory's Economy of Nature, Vol. I. p. 425. 426. It is surprising, however, that the flight of birds, more especially those of the larger sorts, and even the power of the wind, did not convince them that the air, notwithstanding its light appearance, was possessed of a considerable degree of weight or gravity.

all places where such a substance is necessary, even to the bottom of the deepest mines, and throughout all the windings thereof*. If air were not elastic, when its particles are pressed forcibly together, it would be formed into a hard body like snow. On the contrary, it preserves its elasticity, though retained in a compressed state, (for instance, in a common air-gun), for any length of time. Some philosophers contend, that the spring of the air may be so disturbed by violent pressure, as to require some time to recover its natural tone; and Dr Hales would infer, from a number of experiments, that the elasticity of the air might be actually destroyed. But other authors have proved, that the expansive projective force of the air has been preserved for many years to its original extent†.

Elasticity necessarily implies in it compressibility; and, indeed, the common air-gun sufficiently proves that air can be condensed, and that to a considerable degree; but the celebrated Dr Halley asserts, that no force whatever is able to reduce air, into a space 800 times less than that which it naturally possesses on the surface of our earth. It is owing to this property in the air, that it necessarily becomes more compressed, and has more density, in low valleys than upon high mountains, a circumstance by some accounted rather in favour of respiration; and, in fact, many

---

[*] It is said, that, owing to the windings of some of the coal mines at Newcastle, the air must penetrate *several hundred miles under ground.* It would be right to have this air analyzed, to see in what respect it differs from atmospheric air. It is a necessary consequence of the law of gravitation that every cavity of the earth must be filled, either with water or some elastic fluid.

[†] Roberval having let his air-gun remain charged for the space of 16 years, found, on discharging it, that the air's elastic force was not at all abated. See Hist. de l'Academ. Royale, 1695, p. 368.

many individuals find, that they breathe more freely in a heavy, than in a light atmosphere.

It is calculated that the air we breathe, near the surface of the earth, is compressed, by the weight of the superincumbent column of the atmosphere, into at least the 13,679th part of the space it should possess *in vacuo*. By art, however, it is capable of being condensed to a still greater extent.

Besides these properties which belong to the mass of the atmosphere in general, there are various effects resulting from the powers of the different ingredients of which it is composed, which are of a chemical nature. Indeed, the air is a principal agent in the decomposition of the bodies, and in all the chemical changes on the surface of the globe. Thus, it possesses a power of dissolving bodies, of forming with them new compounds, or of converting them again into earth, by which means nuisances are not only removed, but become useful as sources of fertility. It also volatilizes fixed bodies, as salt; for that substance may be entirely evaporated into air, if exposed in a place replete with acid vapours. Its other properties, as fixing volatile bodies, and bringing quiescent bodies into action, it is not necessary now to enter into, having no particular connexion with our present inquiries.

3. OF THE QUALITIES OF THE AIR.

THE qualities of the air depend on its being hot or cold, dry or moist, light or heavy, inland or maritime; and it is well known what important effects these various circumstances produce on the health of the human body.

1. *Hot air.*—The effects of hot air will be easily understood,

stood, if we consider for a moment that the air quickly reduces to its own temperature those bodies which it surrounds or penetrates [*]. When we see, indeed, after the colds of winter, how rapidly the heat of summer revives all nature, makes the plants to grow, the trees to blossom, and every other animal to rejoice, we cannot suppose that man should be the only exception. But its principal effects, in regard to the human species, result from this, that the quantity of perspiration, sensible and insensible, is in a great measure regulated, by the degree of heat applied to the human body [†]. It is supposed, that in England, perspiration scarcely equals all the other excretions, though in summer it is nearly double to that of winter; whereas, in the air of Padua, during the whole year, the perspiration is, to the other excretions, as 5 to 3, and in other countries it is probably still greater.

The heat in the atmosphere, the most congenial to the human frame, is from 50 to 70 of Fahrenheit: That temperature has generally been considered by physicians as the most favourable to health; and it is this scale of temperature, which has generally prevailed in the countries most famed for intellectual exertion and strength, both of body and mind. When that proportion is much exceeded, the fibres are lengthened and relaxed, and hence proceeds the sensation of faintishness and debility in a hot day. To prove the effects of heat on animals, the celebrated Boerhaave put a sparrow and a dog into a sugar-baker's drying room, where the air was heated to 146, or 54° beyond that of the human body [‡]. The sparrow died in two minutes,

---

[*] Valangin on Diet, &c. p. 20.

[†] Arbuthnot on Air, p. 50.

[‡] See Arbuthnot on Air, p. 16. The heat was calculated according to Hales's thermometer.

and the dog in 28 [*]. It is believed that men cannot live long in an air hotter than their own bodies, which in adult persons is calculated at 98°, and in children at 90° [†].

When the air is extremely hot, by promoting perspiration, it dissipates the thinner, watery, and volatile parts of the blood, and by thickening that source of nourishment and life, lays a foundation for many disorders, more especially fevers, of a bilious, putrid, ardent, and malignant nature. Hence, an extreme hot climate is far from being wholesome.

2. *Cold air.*—It is evident that cold must have effects on the human body directly opposite to those of heat. Cold air braces the fibres, not only by its condensing quality, but by rendering the air drier; and as the bulk of all bodies is diminished by cold, hence it necessarily follows, that, in cold weather, all animals should become of less dimensions than in hot. By bracing the fibres also, and more strongly condensing the fluids, it produces that strength and activity which is so sensibly felt in clear frosty weather [‡]. On the other hand, by contracting the fibres of the skin, and cooling the blood too much in those vessels which are exposed to the air, some of the grosser parts, and most acrid or saline particles of the perspirable matter, which would evaporate in warm weather, are retained in cold, and produce coughs, scurvies, and other disorders to

---

[*] Arbuthnot on Air, p. 49.

[†] The experiments of Blagden and his friends were made in rooms above the boiling temperature; a girl has gone into a baker's oven nearly 400°.

[‡] Cold air, in most people, also increases the appetite. It is remarkable, in the history of such as perished by cold in northern countries, that they kept their appetite to the last. Arbuthnot on Air, p. 209.

which cold countries are liable. It is strongly in their favour, however, that such countries are much more frequently affected by wind, than the hot, by which the air is greatly purified.

3. *Moist air.*—Where the air is saturated by moisture, it is reckoned peculiarly unwholesome *. When accompanied by cold, it is unfavourable to health, as is often fatally experienced by delicate people during the fogs of London and Paris; but, when it is accompanied by hot weather, it is still more prejudicial. Hence the great mortality, during the hot season, at Batavia, and some of the West India islands.

4. *Dry air.*—When the air is dry, it contains a number of saline and other particles, which, by rain or moisture, might have been carried down to the surface of the earth. It also imbibes animal and vegetable effluvia, which must have a considerable influence on the body. By great dryness in the air, the very texture and situation of the pores of the skin may be altered. A dry air, if not too warm, is both agreeable and healthy; but, when accompanied with great heat, is attended with the most fatal consequences, both to animals and vegetables †. Even in England, it has been

---

* Hippocrates of old observed, that the Phasians were tall, soft, bloated, and pale, on account of the excessive moisture of the air they breathe; their country being marshy, hot, watery, woody, and subject to violent showers at all seasons. The mortality, however, is in general greater in cold than in mild and moist winters, particularly among old people.

† See the description of the Harmatan and the Sirocco in Gregory's Economy of Nature, Vol. I. p. 477. 478, &c. In Egypt, during a certain period of summer, the hot winds blow, called by the inhabitants *campsin*, from their continuance for 50 days, though they have no determined time,

observed, that extreme dry seasons have been found more dangerous to human bodies than wet *.

5. *Light air.*—It is found by experience, that the lightness of air, on the tops of high mountains, is unfavourable to respiration. Persons in these elevated situations are obliged to take breath oftener than in the lower regions; and are sometimes so violently affected as to throw up blood, by the straining which the rarity of the atmosphere occasions †. A certain portion of the pressure of the atmosphere

---

but last sometimes more than three months. The inhabitants, during the campsin, live under ground. Arbuthnot on Air.

* See Arbuthnot on Air, p. 183. Great droughts, he observes, have always been found noxious to the human body. Previous to the destructive epidemical distempers which took place in the latter end of the year 1732, and beginning of 1733, there was a great drought in England, and in the greatest part of Europe, which ultimately proved extremely fatal to all the places affected by it. Great droughts exert their effects after the surface of the earth is again opened by moisture; and the perspiration of the ground, which was long suppressed, is suddenly restored. It is probable that the earth then emits several new effluvia, hurtful to human bodies; and this appeared to be the case, by the thick and stinking fogs which succeeded the rain that had fallen before. See Arbuthnot on Air, p. 194. 199. Dr Bisset remarks, that the inhabitants of places on the sea coast are less subject to those diseases which generally result from an exceeding hot and dry summer than those of inland towns. Essay on the Medical Constitution of Great Britain, p. 3. This is a circumstance much in favour of maritime situations.

† Derham's Physico-Theology, Vol. , p. 11.

Lord Bacon (Nov. Organ. Scient. lib. 2. apho. 12.) says, when they mounted to the top of Olympus, the air was so thin that they were obliged to hold sponges dipped in vinegar and water to their noses and mouths. Also, that the air on the top of Teneriffe is so sharp, as to cause violent pains in the eyes, and so thin and light, as to make many vomit.

The air on one very high mountain of Peru, according to d'Acosta, is mortal at the first blast; and, by its coldness, dead bodies are preserved from putrefaction. At the top of one of these Peruvian mountains, which probably are the highest in the world, he and his company were seized with bilious vomitings, perhaps from the thinness as well as coldness of the mosphere being taken off the veins or blood-vessels, they expand and swell, by which a shortness of breath, and a spitting of blood are occasioned *. When fermented liquors are carried in bottles to that height, the air contained in the liquor, rarifies as much as the air without, by which means the bottles are burst. But though light air, when carried to an extreme, is so certainly prejudicial, yet, in certain cases, it may be of use; and the air of mountains, and of mountainous districts, may be of service in several disorders, though it will never probably be found so essential to health, that the plan of taking aerial voyages, merely for the purpose of breathing purer air, will ever be actually carried into effect †.

6. *Heavy air.*—Air in some measure compressed, or rather heavy, is not unfavourable to the human frame. When it

---

the air.—Arbuthnot on Air, p. 81. But these assertions by Acosta seem to be greatly exaggerated. Humboldt has lately ascended one of the peaks of the Andes, more than 16,000 feet above the level of the sea. De Saussure, in his "*Voyages dans les Alpes*," has given the best and most accurate account of highly rarified air, the effects of which he experienced, to their greatest extent, on Mont Blanc. They were exceedingly disagreeable, but not terrible.

* In a recent publication this doctrine is controverted. Suspension of accustomed and appropriate stimuli, rather than diminution of atmospheric pressure, it is contended, ought to be regarded as the direct occasion of those peculiar affections of the respiratory organs, and other parts of the system, as related by those who have ascended lofty mountains; and Saussure himself remarks, that, however elevated the situation, yet in a state of repose, these symptoms vanished. See Dr Reid's Treatise on the Origin and Progress, Prevention and Treatment of Consumption. 1 vol. octavo. Printed at London 1806. But however ingenious this observation may be, it still appears, that, where there is *any exertion* in elevated situations, the lungs will be affected more than the same exertion would occasion in a lower region.

† See this plan hinted at in Struve's Asthenology, translated by Johnston, p. 346.

it is of too light and subtile a nature, though it may be calculated for the eagle, and other descriptions of birds, yet it does not agree with the constitution of man. It appears, by authentic experiments, that animals live longer, when breathing a like quantity of compressed, than uncompressed air; and the weight of the atmosphere compresses the air in valleys and champaign countries, and consequently renders such air better calculated to support great numbers of inhabitants *. It must also contain, for its bulk, a greater quantity of oxygen or vital air.

7. *Inland air.*—The air of inland districts must have qualities very different from those on the sea coast. In the interior parts of a country, the air must partake much of the qualities of the soil and of its productions. Much also must depend upon the state of its cultivation. Even countries naturally unwholesome, if cleared of wood, and rendered fertile, become immediately healthy. It is also to be observed, that the central countries of great continents are colder than those that have the sea air. Moscow, in the same latitude with Edinburgh, is much colder †.

8.

---

* It is of great importance that the air should be of a due gravity and elasticity, that it may distend the lungs sufficiently; for, however stronger constitutions can bear either an increased or diminished weight of the air, and can live on the tops of the highest mountains, or in the bottom of the lowest valleys, yet the sick, weak, and the valetudinary cannot bear it; the latter require more elevated, the former more depressed, situations, as the column of the incumbent air is lighter or heavier. Short's Observations on Bills of Mortality, p. 420.

† Arbuthnot on Air, p. 78.
Strother, in his Essays on Sickness and Health, p. 26. contends, that the midland counties in England are the most healthy, and less subject to a variety of weather. He observes, that where the easterly or westerly winds give rains in abundance to the coasts, yet the middle way, between

sea

8. *Maritime air.*—The nature of the air at sea is, in various respects, very different from that which is to be met with in the inland parts of the country. 1. Sea air is more humid, owing to the great quantity of vapour which is constantly evaporating from the surface of such an extent of water. 2. The air at sea is more frequently agitated, and storms are more violent, and continue longer there than at land *. 3. In the same country, the air is found of very different temperatures, in regard to heat and cold, and possessing very different qualities; but at sea, the air is more uniform, and less susceptible of variety. 4. The air at sea never stagnates, having no impediments to its course, from mountains, hills, or forests, and being continually agitated by winds, currents, and the constant flux and reflux of the tides. 5. Sea air is warmer, more especially in the extreme cold of winter, than the air which is incumbent on the earth: Indeed, were it not for that circumstance, sailors could not, except with the greatest hazard, bear to be so often wet as they are †. 6. A portion of sea salt must also be raised by the spray, and perhaps by the vapour of the sea, which is likely to be attended rather with beneficial [illegible] effects

---

sea and sea, has then been calm and dry: the clouds brought from either sea, drop before they come midway. The accounts which are given of the air of Cheltenham seem to justify these observations.

* In the British Encyclopedia, *voce* Aerology, p. 156, it is stated, that Dr Dobson of Liverpool found sea water contained air superior in quality to that of the atmosphere. Hence the utility of sea voyages to invalids may arise. Arbuthnot, on the other hand, contends, that were it not for constant winds, which blow off the coat of vapours which invests the ocean, sea air would be intolerable to human bodies. On Air, p. 70.

† It is the saline matter in sea water that makes getting wet with it inoffensive. When seamen are exposed to rain at sea, they are apt to catch cold, [illegible]

effects than otherwise *. 7. Sea air also is not liable, as land air, to be deteriorated by the putrefaction of animal and of vegetable substances, the respiration of animals, the support of combustion, and exhalations of all descriptions.

Such are the various sorts of atmospheric air, and the general qualities of each. It is proper, however, to observe, that by custom †, men may be reconciled to different sorts of air, and that there is no animal so capable of being made indigenous to so many various climates. Generally speaking, the animals of warm countries cannot subsist in cold. African animals can hardly endure the coldness of the open air of England, which is too warm for rein-deer; yet man can subsist on air, from under the line, to perhaps 77 degrees of latitude. What makes the difference between mankind and other animals, is, that man is assisted by many contrivances of art to bear extremities. Brutes, left to their own choice, as far as they can procure their ends by local motion, chuse the countries and climates most adapted to their constitutions; and so perhaps would a human creature, if he were left to his own inclination; but he is in society and under government, and subject to passions, to which he sacrificeth the greatest blessings of health, and life itself ‡.

Besides

---

* These particulars are more fully explained in a valuable work, entitled, The use of Sea Voyages in Medicine, by Ebenezer Gilchrist, M. D. one vol. octavo, London 1757.

† The effects of custom, in regard to air, cannot be more strongly exemplified, than by this singular circumstance, that a mouse or a duck, accustomed to an exhausted receiver, can bear it longer than a fresh one, so much are all animals the children of custom. Arbuthnot on Air, p. 97. Philos. Transactions, abridged by Louth, p. 229. 230.

‡ Arbuthnot on Air, p. 92. 93.

Besides atmospheric air, a variety of elastic fluids, resembling, in various respects, that substance, have been discovered by modern chemists. The nature and properties, however, of these fluids, do not properly come within the compass of our present inquiries; and the attempts which have been made to prevent or to cure diseases, by what is called pneumatic medicine, or by the use of the different aerial fluids lately discovered, will be treated of in a subsequent part of this work.

4. OF RESPIRATION, THE CIRCUMSTANCES WHICH RENDER BREATHING ESSENTIAL FOR THE SUSTENANCE OF LIFE, AND THE NECESSITY OF FRESH AIR FOR THAT PURPOSE.

IT is a well known fact, that though men have lived without food, even for some days, they can hardly exist a few moments only without air, consequently that article is, above every other one, essential for animal life*. However mysterious this may at first appear, yet, by the attention which has been bestowed upon the subject by a number of able and intelligent men, it has in a great measure been explained.

The uses of respiration†, or breathing atmospheric air, are as follow: 1. It restores the florid colour and stimulus

---

* It is so essential, that breathing goes on as regularly, when a person is asleep, as when he is awake.

† Dr Menzies says, that by respiration we mean that function in which, by the alternate dilation and contraction of the thorax, a quantity of air is received into the lungs, and afterwards expelled from them. The first of these actions is called inspiration, the latter expiration. See a Dissertation on Respiration, translated from the Latin of Dr Menzies, by Charles Sugrue, p. 2.

mulus of blood. 2. It makes the blood fitter to repair some of the most essential parts of the body. 3. It is the means by which the body is kept at nearly the same standard of heat or temperature. 4. It promotes the circulation of the blood, without the continuance of which, death must ensue; and, 5. It enables the body to get rid of substances destructive to health and life *.

1. We shall endeavour, in a subsequent part of this work, to explain the manner in which the blood is formed. It is sufficient, for our present purpose, to remark, that the food we eat, after being subjected to various operations, is at last converted into a soft milky juice, technically called *chyle*. This substance, in the course of its circulation, passes through the lungs, and comes in contact with the atmos-

---

* The learned Etmullerus in his Dissert. XI. Chap. 10. sect. 1. and 16. sums up the uses of respiration in the following manner: It serves, he remarks, 1. For smelling; 2. For hawking and spitting; 3. For yawning, coughing, sneezing, and blowing the nose; 4. For drinking and supping up liquors; 5. For speaking, singing, crying, laughing, weeping, blowing, &c.; 6. For propelling the fæces by stool or urine, and for expelling the embryo, and the after-birth; 7. For promoting the motion of the contents of the stomach, intestines, and lacteals; 8. For carrying off from the lungs the watery particles imbibed by the blood; 9. For perspiration; 10. For the more perfect mixture of the chyle, the lymph, and the blood; 11. For giving the blood its florid red colour; 12. Nor can we deny that the air serves to cool the lungs and blood passing through them; 13. Likewise, that the air, at each respiration, mixing itself a little with the blood, contributes in some degree to the elaboration of the animal spirits. All these uses, although of great consequence, yet he thinks, rather conduce to the *well-being*, than to the *being* of the animal, because without any of them, the animal would not so speedily die, as it doth by strangling, or in the air-pump. He, therefore, assigns a 14th, and the principal use of respiration to be, for the passing of the blood through the lungs that is thrown into them by the heart. See Derham's Physico-Theology, edit. 1798, Vol. I. p. 222. note. There is much information upon this subject, in Dr *Bostock's Essay on Respiration*. It is to be hoped that so important a work will soon be completed.

pheric air, which is drawn in by that organ. By that contact, it receives from the oxygenous part of the air, that red or florid colour by which arterial blood is distinguished. Besides this change in its colour or appearance, it is probable that other properties are acquired, such as the power of stimulating the heart and the arteries to action.

2. It is from the blood that all the various parts of the body must be repaired; and, in particular, for repairing the waste made in the fleshy or muscular parts of the body, a substance called *fibrina* must be formed in the blood. This is effected by the azotic part of the atmosphere, which the lungs have imbibed, and is another most important advantage arising from respiration.

3. There are no circumstances in the economy of man more extraordinary than this, that his body should always remain of nearly the same temperature. This, in a great measure, depends upon respiration. Part of the air we inspire combines with the blood; the combined heat, to which its gaseous form was owing, is set at liberty, and in part increases the temperature of the expired air, and in part is absorbed by the lungs with the air it breathes *, and thence diffused through the entire system, by means of the blood. Were it not for this constant absorption of heat, the temperature of men, and of other animals, could never be so much higher than that of the surrounding atmosphere, notwithstanding the heat which they are continually giving out to the colder surrounding bodies.

---

* This point is satisfactorily proved in Menzies's Dissertation on Respiration, translated by Sugrue, (8vo. Edinburgh, 1796.) p. 34. 35, &c.

4. The circulation of the blood is absolutely essential for the continuance of animal life. Without respiration, this could not be effected *. By the heat and other properties thus obtained from the atmosphere, the blood acquires those stimulating powers, by the action of which the heart is alternately contracted, and the circulation regularly carried on. Considering the great importance of this function, it is not, therefore, to be wondered at, that an animal should die as soon as its respiration is effectually stopped.

5. Nor is this all; an animal would soon perish, unless it had the means of expelling such substances as are either noxious in themselves, or any great accumulation of which would be pernicious. This is most happily brought about through the medium of respiration. By the lungs, no less a quantity than 37 ounces of carbonic acid gas are emitted in the course of one day, which, if retained in the body, to so great an amount, would be extremely prejudicial. By the same means, any superfluous moisture is extracted from the blood, and emitted. The quantity must vary, but generally exceeds 20 ounces per day. The blood is thus kept of a proper consistency, neither too fluid nor too dense*.

On the Necessity of Fresh Air for Respiration.

When the importance of respiration is considered, it will not be wondered at, that the air, with all its different qualities, can alter and entirely vitiate the whole texture of the blood, and the nature of the animal juices [*]; that fresh air should be found as necessary for man as clear water is to fishes; and that the choice of good air should be accounted, by Hippocrates, a circumstance claiming the first rank in the regimen of health. This is particularly the case in regard to children, for it is a melancholy fact, that, in a great measure owing to the impurity of the air of London, one half of the children born there die before they are two years old. In the Lying-in-Hospital at Dublin, the proportion was found infinitely greater; for, in the space of four years, ending anno 1784, no less a number than 2944 infants, out of 7650, died within the first fortnight after their birth. It was fortunately discovered, that this melancholy circumstance arose, from their not having a sufficient quantity of good air to breathe. The Hospital was then completely ventilated; the consequence of which was, that the proportion of deaths was reduced to 279. Hence there was reason to suppose, that out of 2944, who had died in the space of four years before, no less a number than 2655 had perished solely from the want of a due supply of air [†].

---

* The blood cannot circulate through the body unless it pass the lungs, which it cannot do, so long as they are unblown up by the air. Method of Preserving Health, p. 167.

* The subject of respiration is ably explained in Thomson's System of Chemistry, Vol. IV. p. 708.

A number of other facts prove the advantages of fresh air, and the necessity of having it frequently renewed. The short space of time during which a person can exist in a diving-bell; the well known story of the black-hole or prison of Calcutta; some circumstances which have occurred in the African slave trade; a fact mentioned by Dr

---

[*] Cheyne's Eſſay on Health and Long Life, p. 6. No. II.

[†] Garnett's Lecture on the Preservation of Health, p. 64. 65.; also Thornton's Phil. of Medicine, Vol. I. p. 334. where the fact is more fully and minutely detailed. In all hospitals hitherto built, the ceilings are too low, and the windows too small.

Darwin; and other circumstances stated by Dr Adair, put this matter beyond a doubt *.

Not only is fresh air necessary, but, if it is suffered to become foul and noxious, it weakens the springs of life, and generates the most malignant and contagious diseases; and air, from being the first support of life, is thus rendered, by stagnation, so putrid, as to become a most subtile poison †. It is from stagnation, that the air of old wells, and of caves under ground, becomes so pernicious; and it is well known, that it is from putrid air whence that malignant fever, known under the name of the Jail Distemper, takes its rise.

Is it not surprising, then, that whilst we are so attentive to our food, and employ so much trouble and expence about it, that we should not bestow more attention upon an article, equally, if not still more essential?

Absorbing Air *.

But respiration is not the only means by which the human frame is affected by the air we breathe. Many sensible changes are produced on the human body, not only by outward contact, (by which the eyes and the ears in particular are affected), but also, it is said, by its being constantly imbibed by all the pores of the body. The skins of living animals are moist and oily; and since many bodies denser than air, (as mercury, cantharides, &c.) will enter the pores of the skin, it is contended, that so thin and subtile a substance as air can hardly be excluded *. The jockies at Newmarket, we are told, are convinced of the truth of this observation, and other experiments seem to confirm it †. On this subject a very valuable paper has been lately printed, which gives a more satisfactory account of the functions of the skin than any that has hitherto appeared ‡. At the same time, it is proper to observe, that cutaneous ab-

---

* See Thornton's Philosophy of Medicine, Vol. I. p. 325. and 331. Beddoe's Introductory Lecture, p. 76, note. Adair's Medical Cautions, p. 40. He mentions there, that 18 charity children and a servant lay in an apartment of a house in King's Street, Golden Square, when, to render the room warmer, they shut up the chimney, and used every other means to exclude the cold air, the consequence of which was, that the servant and ten of the children were seized with various alarming symptoms, of a disorder nearly similar, accompanied with excruciating pains, convulsions, &c.

† Adair, p. 41. Valangin, p. 51.

* In an Essay on *External Remedies*, by P. Kennedy, printed in 1715, there are several observations tending to prove that many distempers may be

---

be cured *by outward means*, a circumstance which can only arise from absorption. This is a subject which, perhaps, merits more the attention of medical men than hitherto has been the case.

* Hufeland, Vol. I. p. 186. goes so far as to assert, that there is a great accession of vital nourishment from without, which is received by our lungs *and skin*; and which, for spiritual support, is of much more importance than the nourishment received by the stomach.

† In Dr Keill's Journals of Perspiration, there is an instance of a person growing 18 ounces heavier by absorbing air. See Lynch's Guide to Health, p. 110. Bishop Watson, (Chemical Essays, Vol. III. p. 101.) mentions the fact, of a lad at Newmarket, who had gained 30 ounces of weight in an hour, with no other nourishment but a glass of wine.

‡ See Dr Kellie's paper on the functions of the skin, in the Edinburgh Medical and Surgical Journal, Vol. I. p. 170. After tracing, in a distinct and satisfactory manner, all the experiments which have hitherto been made to establish or to refute the doctrine of absorption, he concludes with stating it as a doctrine sufficiently established, " that *inhalation* is, no " less than *exhalation*, a function of the skin." Dolomieu also, in stating the advantages of warm-bathing, affirms, that the quantity of water taken up by the absorbing vessels, restores to the blood that finer fluid which was thrown off. This can only be the effect of cutaneous absorption, independently of cuticular abrasion.

sorption, independently of some degree of cuticular abrasion, is denied by very respectable authorities *.

Advantages of Air.

It appears, then, on the whole, that, without atmospheric air, constituted as it is, men could not enjoy any of the comforts of life, nor even continue in existence. Were it not *transparent*, they could not see: Were it not *fluid*, they could not hear †: Were it not *easily divisible*, they could not move from one place to another: Were it not *heavy*, their vessels would swell, and probably burst by expansion: Were it not *perpetually in motion*, it would become corrupt and poisonous: Were it not *both heavy and moveable*, navigation could not be carried on, and many useful machines must be laid aside: Were it not *elastic*, and consequently able to penetrate into the inmost recesses of nature, and the deepest mines, the riches contained in the bowels of the earth would forever be inaccessible: Were it not also, with its elasticity, *compressible*, the lower and more fertile regions of the globe would scarcely be habitable to the extent they are: And, lastly, were it not that, by *respiration*, or breathing, we imbibe the salutary and vivifying principles with which the atmosphere abounds, the human race would become extinct *.

---

* Doctor Currie, in his Medical Reports on the Effects of Water, Cold and Warm, in Fevers, Chap. 17. p. 244, has discussed the question, "Whether there is an inhalation by the skin?" with his usual ability. In the Appendix, however, to that work, No. 3. p. 56. he admits that the question is not decided, though he retains his opinion regarding the non-absorption of the surface of the body.

† Cicero, de Nat. Deorum, lib. 2. c. 33. says, "*Ipse aer nobiscum videt, nobiscum audit, nobiscum sonat, nihil enim eorum sine eo fieri potest.*" The attention of the author was accidentally called to this quotation from Cicero, after this paragraph, stating the advantages of air, was written. By comparing the two together, the reader will at once perceive the greater extent, and infinite superiority of modern philosophy over the ancient, on the subject at least of air.

---

* Haller, Elem. Phisol. Tom. II. p. 155, has justly remarked, "*Aeris* "*dates nondum satis notae sunt*." On the subject of air in general, it is well observed, by the Rev. Dr Gregory, "that we are too apt to confound air and temperature. If the question is between a populous city and the open country, then it must strike every person, that, in the former, there is an immense and speedy consumption of the oxygen; and though it may be admitted, that much is also generated by different processes, yet, I believe, not quite in equal proportion as it is destroyed. Besides that, notwithstanding we have no chemical tests for ascertaining the fact, and though it has been denied by some late philosophers, I am satisfied that the air of cities must be contaminated by a mixture of various effluvia prejudicial to health. We know, from the miasma of marshes, that such matters can exist in the air undiscoverable by any tests; and, from the evil effects of cities on delicate constitutions, it is reasonable to suppose that they exist in the air there.

I believe it is remarked, that erysipelas is more frequent in London than elsewhere, and that people coming from the country to reside there are commonly seized with it. Coughs and catarrhs are also more common there than in the country. To this I can speak from my own experience, and yet I know not whether to attribute this effect to air or *situation*. People in London live in very close rooms, and they go out of them into a stream of cold air; at the corners of the streets this inconvenience is experienced more in London than any where. Yet I must confess, that I never understood the theory of catching cold, nor can I guess how this inflammatory process is produced, unless the old theory is true, that it arises from the perspiration being obstructed in some way or other, which seems a cause adequate to the producing local or general inflammation and feverish symptoms. Brown's account of the origin of these complaints is certainly erroneous.

To an English constitution, I believe, what is termed a mild air, or rather a mild temperature, is most salubrious, because most equal. We have many instances of great longevity in mountainous situations; but I rather think it is only the hardy children that, in such places, arrive at maturity; and population, I observe, is never so great there as in level countries. I will not make an exception of Switzerland, for I believe the mass of the population is in the lower parts."

Let us next consider the rules which ought to be observed regarding the important function of respiration, the nature and advantages of which could not have been well understood, without these previous explanations.

5. RULES CONNECTED WITH THE FUNCTION OF RESPIRATION, AND THE NATURE AND QUALITIES OF THE AIR WE BREATHE.

FROM the preceding observations, it may be safely concluded, that air is so essential to life, that no animal can subsist without it for a moment; and that on its purity must, in a great measure, depend the health of the individual *.

As the quality of air differs from a variety of circumstances above explained, and as men, by attention and custom, can exist almost equally well in a great variety of climates †, it is necessary to consider by what means that can

---

* The purer the air is, the more easily it can unite with, suspend, and discharge a larger quantity of noxious matter, and thereby prevent the dangerous effects of retention; whereas impure air, being already saturated with such matter, cannot take in more. Hence Strother, p. 11. advises, where a due perspiration is required, (as in most cases of fullness), that patients should be advised to live in a dry soil, that the atmosphere of vapours exhaling from the earth may be as small as possible, and, consequently, that the air may be better able to absorb excrementitious matter from the skin, the want of which occasions some of the dangers of putrid air, by keeping back perspiration.

† It is asserted that the country not only affects the health, but also forms the features; and that the shape of animals is modified by it. The observation certainly holds good, in regard to vegetables, for in cold climates they are much more stinted in their growth than in warm ones. In regard to animals, the air is a fluid which, by a gentle pressure, resists the motion of the heart in the expansion and elongation of the fibres; and the

can be effected, and what rules are necessary for that purpose.

These rules must depend on the following particulars: 1. The soil of the country. 2. The climate and seasons; and, 3. The situation of the house where any individual resides. To these must be added, rules of a miscellaneous nature, calculated for persons in infancy, in youth, in manhood, in sickness, and in old age.

Rules connected with the Nature and Qualities of the Soil.

It has been justly remarked, that we are not yet possessed of a complete test of the salubrity of air in general, and, till this can be obtained, our only guide must be experience. There are some indications, however, which prove the healthiness of a country; as, 1. The quality of springs, as they must denote the nature of the air, for both imbibe the saline and mineral exhalations of the ground; where the water, therefore, is sweet and good, the air probably partakes of the same qualities. 2. If the complexion of the inhabitants is clear and vivid, it is the sign of a wholesome air; and, 3. Where, in proportion to the number of the inhabitants, many reach a considerable age, (which will appear from the bills of mortality), the air is necessarily

healthy

---

the fibres of several animals shoot in this fluid according to their original shapes; yet such a fluid, resisting by its pressure, is, in respect to the animal, like a soft mould in which the body is formed; and, therefore, according to the quantity of its pressure, depending upon its most permanent state of dense, rare, hot, cold, dry, moist, must have some influence in forming the outward figure of such a body in a state of growth. Arbuthnot on Air, p. 147.

healthy[*]. On the other hand, dampness of wainscot, rotting of furniture, tarnishing of metals, rusting of iron, efflorescence of salt upon any bodies, discolorations of silks and linens, are indications of dampness and insalubrity.

The local qualities of the air depend upon the exhalations of the soil, and those of its neighbourhood, which may be brought to it by winds. It appears, however, from the careful inspection of various registers, that more regard ought to be had to the surface of the soil, than to its subterraneous contents[†].

A soil gravelly, chalky, or sandy, has but little perspiration, and imbibes the moisture that falls upon it. It is, therefore, free from noxious exhalations.

From a rich, fat, and marshy soil, a great quantity and variety of vapours are raised, by the action of the sun, and the heat which it communicates to the surface of the earth. These vapours, consisting of water, oils, salts, and several other ingredients, must variously affect the inhabitants by their contents, more especially at certain times and periods of the year. This accounts for a common observation, that rich soils, on the banks of rivers, in hot countries, are extremely unwholesome[‡].

---

[*] Shakspeare gives another mark of pure air:

"The guest of summer,
The temple-haunting martlet, does approve,
By his lov'd masonry, that the heaven's breath
Smells sweetly here:
Where they most breed and haunt, I have observ'd,
The air is delicate."—Macbeth, Act 1. Scene 6.

[†] Short's Observations on Bills of Mortality, p. 64.

[‡] Arbuthnot on Air, p. 20. After an overflowing of the Nile, great numbers of fishes, &c. are left on the banks to putrify. The effluvia from them must occasion dysentery and plague.

Mere watery exhalations are not so unwholesome, if they come from soils, such as clay, which retain water, provided it does not stagnate and become corrupt. Hence, also, the moisture from peat-mosses, more especially on the sides of hills, is not pernicious to health.

The importance of the soil, and the exhalations which proceed from it, cannot be better elucidated, than by referring to an old method, the efficacy of which cannot be questioned, that of inhaling the vapour of fresh turned up earth, which has in it something strengthening and refreshing, even in small quantities, and, consequently, it must have a great influence on a larger scale. Bacon was acquainted with a very old man, who, every morning, as soon as he awoke, caused a piece of earth to be held before his nose, that he might inhale the vapour. He recommends, therefore, the smell of fresh earth, which may be obtained by following the plough, or digging up the earth, particularly in the spring. Hufeland[*] has lately recommended these means to consumptive persons, who may thus inhale the vapour, either in the open air, or in an apartment. The sensation produced by it is like that felt on inhaling vital air, and is inexpressibly animating[†].

Rules connected with the Climate and Seasons.

It is contended, by some authors, that a uniformity of climate is desirable, as being favourable to health and long

---

[*] See his Journal, Vol. I. p. 386.

[†] The application of earth, freshly dug up, has been found by Struve of great service in lameness of the extremities, especially when accompanied

life *. But Hippocrates affirms that such uniformity is not to be wished for. It is the equality of the temperature of the seasons, which renders Asiatic nations indolent and lazy, slavish, submissive to masters, and unwilling to quit their ease or their families, or to subject themselves to labour or hardships; whereas, in countries where there is a great variety of heat and cold, and where, by the alterations of the weather, and the necessity of labour, both the mind and the body must be constantly employed, the men are courageous, disposed to activity, labour and exercise; and become, in every respect, a superior race of beings †. Those, therefore, who live in such climates, have no reason to be dissatisfied with their condition.

It must be admitted, at the same time, that the change of seasons ‡ does affect the health, the constitution, and the spirits; and in this country, in particular, those changes are so very sudden, that if we were not accustomed to them, they would necessarily affect us more than is usually

---

nied with desiccation. He caused the affected part, either in the open air, or in the house, to be entirely covered with earth, and to be kept in that state for half an hour, when the part was uncovered, it was found to be in full perspiration. This was daily repeated. Asthenology, p. 335. 336. See also, Arbuthnot on Air, p. 208. He recommends that the earth used should be perfectly dry, and without any noxious qualities. It is well known how strongly the virtues of an *earth bath* were inculcated by that eccentric empiric Dr Graham.

* Hufeland, Vol. I. p. 268. 269.

† Clifton's Hippocrates. On Air, Water, and Situation, p. 32.

‡ In a work entitled, "Le Medicin des Dames, ou l'Art de les conserver en Santé," printed at Paris, in one vol. 8vo. anno 1771, there are some ingenious observations on the four seasons of the year, applicable to the meridian of France. The best work on the medical climate of Great Britain, is one recently published, entitled, "*The Manual of Health*, "or the Invalid conducted safely through the Seasons," printed by Johnson, St Paul's Church-Yard, London, 1806.

usually the case. It is the more desirable, therefore, in consequence of that circumstance, to study this subject attentively, that we may be fully aware of the means by which the dangers of a varied climate can best be prevented.

Medical persons, in particular, ought to consider, with peculiar care, what weather may be expected at the different seasons of the year, in the districts where they practise; the signs also of good or bad seasons *, and the variations of which they are susceptible. By attention to this important subject, the celebrated Hippocrates could prognosticate, from the nature of one season, the diseases likely to prevail in the next. Sydenham also, who was a sagacious and indefatigable observer, was able, by the same means, to foresee future diseases, and to make use of the proper measures of preventing them. Arbuthnot, likewise, has treated this subject with great ability; and from his valuable work on the subject of air, many of the following observations are extracted †.

Rules for Hot Climates.

When the air is rarified by heat, when the body is relaxed by it, and all its humours put in motion, besides a proper attention to clothing, diet, exercise, &c. which will

---

* It has been observed, that the silence of grasshoppers, the croaking of frogs, and bees not making honey, are signs of a bad season.

† Dr Strother, in his Treatise on the Non-naturals, p. 91. justly remarks, that the nature and effect of air are peculiarly entitled to the attention of medical men, for the choice of it is very often a necessary part of their advice. Some people find themselves much disordered in one sort of air and weather, yet are perfectly well in another, the causes of which

will be afterwards explained, it is also necessary to guard against the effects of heat, by rest, shade, ventilators, and by living even in grottos or souterrains * ; nor is the latter part of this advice unsanctioned by experience. Lord Bacon ascribes the longevity of the ancients, partly to their living in caves ; and I am informed, from most respectable authority, that a lady, who had gone from London to Virginia, had found the summer heat so intolerable, that having fortunately discovered near her house a large natural cave, she, and many of her neighbours, frequently, spent the day there, totally unmolested by the greatest heats, and found the utmost benefit from it. The Italians also seek for coolness in summer, either by sitting in dark rooms on the ground-floor, or those with a northern aspect ; and in very hot climates, a part of every house ought to be constructed in the grotto style, or with arched vaults, so as to exclude the violence of the heat †.

---

will easily be discovered by any one, who thoroughly understands the physiology of the air, and the constitution of his patient. Most people find the effects of good air, more especially in stomachic and pectoral cases, and ought to be sent to those places where it can be had in the greatest perfection.

* This is certainly the most effectual means of avoiding insolation, or strokes of the sun, so fatal in hot climates. On this malady, and the means of preventing or of curing it, see Tissot's Advice to People in general, Vol I. chap. 10. In climates where there is any chance of insolation, the head dress should either be a turban, as the Eastern nations have adopted from experience, or a round hat with a high crown, and an interval between the head and the crown. Some travellers in Africa have also found benefit by cutting valves in their hats, to allow the heated or rarified air to escape, and fresh air to be admitted.

† It has been observed in China, that wet clothes exposed to the air, are colder than the temperature of the air, as long as they retain any moisture. Accordingly, in that country, rooms and galleries formed of canvas, are kept constantly wet, to give coldness to the air within. Irvine's Essays on Chemical Subjects, p. 215.

Rules for Cold Climates.

In regard to cold seasons, it is justly observed by Dr Garnett, that nature never made any country too cold for its inhabitants. In cold climates, exercise, and even fatigue, are habitual to them, not only from the necessity of their situation, but from choice; their natural diversions being all of the athletic or violent kind. But the softness and effeminacy of modern manners has both deprived us of our natural defence against the diseases most incident to our climate, and subjected us to all the inconveniences of a warm one.

People are afraid of going out into the cold air; and they certainly ought to avoid rushing from heated rooms into it, without great precautions. But, if they have not been previously overheated, and will conduct themselves properly afterwards, they will never be in the least danger from cold air. Indeed, the action of cold, unless it be excessive, or accompanied with great moisture, rarely produces any bad effects.

A common cold, the parent of so many other disorders, is generally produced in the following manner: when a person in cold weather goes into the open air, every time he draws in his breath, the cold air passes through his nostrils and wind-pipe into the lungs, and consequently diminishes the heat of these parts. As long as the person continues in the cold air, he feels no bad effects from it, but as soon as he returns home, he approaches the fire to warm himself, and very often takes some warm and comfortable drink, *to keep out the cold*, as the saying is. The inevitable consequence is, that he will first perceive a glow within his nostrils and breast, as well as over the the whole surface of the body. Soon afterwards a disagreeable dryness and huskiness will be felt in the nostrils and breast. By and by a short, dry, tickling cough comes on. He feels a shivering, which makes him draw nearer to the fire, but all to no purpose; the more he tries to heat himself, the more chill he becomes. All the mischief is here caused by the violent action of the heat, and the complaints, which are thence produced, might, with more propriety, be called *heats*, rather than *colds*.

These complaints may easily be avoided by adopting the following rules.

When you come out of a very cold atmosphere, you should not at first go into a room that has a fire in it, or, if you cannot avoid that, you should keep for a considerable time at as great distance as possible, and above all, refrain from taking warm or strong liquors when you are cold. This rule is founded upon the same principle as in the case of any part of the body being frost-bitten. If it were brought to the fire, it would soon mortify, whereas, if rubbed with snow, no bad consequences follow from it. Hence, if the following rule was strictly observed, *when the whole body, or any part of it is chilled, bring it to its natural feeling and warmth by degrees;* the frequent colds we experience in winter would be prevented. The practice also, after a cold is caught, of making the room the person sits in warmer than usual, increasing the quantity of bed-clothes, wrapping himself up in flannel, and particularly, drinking a large quantity of barley-water, gruel, or tea, almost boiling hot, by way of diluting, as it is called, and forcing a perspiration, all this will infallibly make the disorder worse, in the same manner as confining inoculated persons in warm rooms, would make their small-pox more violent.

To these judicious observations on preventing colds, Dr Garnett adds an easy mode of curing them if they should be caught *. He observes, that people would scarcely ever feel such a thing as a bad cold, if, when they found it coming on, they were to keep cool, to avoid wine and strong liquors, and to confine themselves for a short time to simple diet of vegetable food, drinking only toast and water. Instances are by no means uncommon, where a heat of the nostrils, difficulty of breathing, a short tickling cough, and other symptoms *threatening a violent cold*, have gone off entirely, in consequence of this plan being pursued †.

I thought it necessary to detail these observations of Dr Garnett's at greater length, as external cold generally constitutes the chief exciting cause of the epidemic, and other prevailing diseases in Great Britain. At the same time, distempers of great malignity, are much greater strangers here, than in most countries on the continent. The weather is seldom hot or cold in extremes, being so much tempered by sea winds, which fan the whole circumference of the island. The moisture of the British air also, by its tendency to relax the fibres, promotes growth; and the coldness of the temperature, which seldom prevails to any immoderate height, condenses the solids and fluids, and strengthens the whole body. Hence, in some measure it is, that the natives of Great Britain, in general, are bigger

---

* Where colds are connected with the stomach, they may be carried off by means of a vomit or a common dose of medicine. An accidental complaint of the bowels has sometimes been of great service in removing a cold, which proves the advantage of cathartics in that complaint; blisters are efficacious, where the cold attacks the throat or the lungs.

† See Garnett's Lecture on the Preservation of Health, p. 72, &c. a work which contains a number of excellent observations, and renders the untimely death of the author a circumstance much to be lamented.

bodied *, broader chested †, and more robust than those of most other countries, and that a greater proportion of the inhabitants of this island, at least on healthful farms and villages, where the people are generally most temperate, and undebauched by spirituous liquors, preserve better health, and live to a greater age, than those of the neighbouring continent.

Rules for Moist Climates.

Damp or moist air, more especially when accompanied with great heat, or great cold, is peculiarly unfavourable to the human species. To any person who has witnessed the thick fogs which frequently take place in London and in Paris, (so thick that light can hardly penetrate them, and sounds are heard indistinctly), it must be a matter of astonishment, that they do not prove more injurious to health than is generally the case; which is in a great measure owing to their being accompanied with cold, and not with heat. Such weather is peculiarly injurious to the eyes, to the throat, and the breast; and if the custom of smoking tobacco, and the moderate use of spirituous liquors, are at all to be justified, it is in such weather where the fogs are accompanied with cold. But, in general, the best cure for the disorders of a moist climate, is to improve the country; and the effects thereof are very ably described in a communication from a very intelligent correspondent, (Dr Kirkland), who had resided for about 30 years in that district of country called the Hundreds of Essex, which were so unhealthy, that hardly any stranger would venture into them. But the state of matters is now happily altered. Owing to the various improvements which have been made in agriculture, more especially by laying the fields open and dry, the country has assumed a different appearance, the inhabitants now breathe in a different atmosphere; and are not only less subject to the ague, but that disease has become more tractable; and thus, enjoying better health, they have lost in a great measure that emaciated and jaundiced look, which formerly constituted the characteristic of the inhabitants *.

---

* Bisset's Essay on the Medical Constitution of Great Britain, p. 11. and 12.

† The advantage of being *broad chested*, both for men and other animals, is very great. The size of the lungs depends upon that of the chest, and the quantity of nourishment received by an animal depends upon the size of the lungs, for in proportion to that organ, is the quantity of blood conveyed to every part of the animal. As all the blood passes through the lungs in the course of circulation, before it can be conveyed to the different parts of the body, the animal, therefore, can receive no more of this fluid, than the capacity of the lungs is capable of transmitting. An animal that has lungs one tenth part larger than the lungs of another animal, must have one tenth more blood distributed through the body at each complete circulation, which, consequently, must make a material difference in the quantity of nourishment with which that animal is supplied. This is the opinion of that respectable surgeon Mr Cline, and seems to be confirmed by experience, as the broadest chested men are always the strongest; and in regard to animals, those which have the broadest chests uniformly get the soonest fat, from the greater quantity of nourishment they receive.

Another

---

* See communication from Dr Kirkland, Code of Longevity, Vol. II. Appendix, p. 214. The idea of moist climates being dangerous, may, however, be carried too far. On this subject, the late respectable and learned Dr Percival, transmitted to me the following observations:

" It appears, from a variety of observations which I have collected, that October, November, and December, in this part of England, are generally very healthy, although the most rainy months in the year. See Tables evincing this fact, Essays, Medical, Philosophical, and Experimental, Vol. II. p. 24. Edition Fourth. Dr Franklin, in a letter to me, remarks, " The inhabitants of Bermudas, St Helena, and other islands far from " continents, surrounded with rocks, against which the waves continually " dashing, fill the air with spray and vapour, and where no wind can " arise that does not pass over much sea, and of course bring much moisture, Another district in England, (the Isle of Ely), was greatly improved in healthiness, by its being cleared of moisture. Before it was drained, the births were to the burials as 61 to 70, but now they are as 60 to 54 *.

Rules in a Dry Climate.

Dry air, when carried to an excess, is prejudicial to health, from the immoderate perspiration which it necessarily occasions †. It leaves the body dry, and the blood full of

---

" ture, are remarkably healthy; and I have long thought mere moist air " has no ill effect on the constitution; though air impregnated with vapours from putrid marshes is found pernicious, not from its moisture, " but putridity. It seems strange, that a man, whose body is composed " in a great part of moist fluids, whose blood and juices are so watery, " and who can swallow quantities of water and small beer daily, without " inconvenience, should fancy that a little more or less moisture in the " air should be of such importance."

* Short's Observations on Bills of Mortality, p. 68. Dr C. Harrison of Horncastle, has found, that the air of the fens, or marshes of Lincolnshire, is not favourable for the production of pulmonary consumption. Though that scourge of this island is reported to destroy annually upwards of 20,000 of the inhabitants, yet in the fenny districts it is rarely to be met with. Whereas in the high-lying division of the county, (*the wolds*) where the air is less moist and bland, that disorder, originating in scrofula, is much more frequent. He further found, in a case or two of the kind, which he adduces, that a removal from the high to the lower fenny part of the county, had repeatedly and uniformly the best effects.

† Dry air, when not carried to excess, is found not unfavourable to health; on the contrary, persons run a great risk who, having been brought up and accustomed to a clear dry air, remove to fenny, wet, and sickly soils; for people born in, and inured to, a moist air, bear it much better, and find less sensible inconvenience from it, than such as have been bred and familiarized to a good one. It is said that the farmers in Essex were formerly accustomed to make great fortunes by marrying wives born in a healthy county, who died soon after residing in the fens, leaving the speculating husband at liberty to look out for some other victim of property, to be sacrificed in the same manner.

of saline particles, and disposes the body to inflammatory diseases. In such circumstances we should be careful, to avoid eating or drinking any article, that contains the least quantity of salt. Spinage, lettuce, melons, and other substances of a cooling nature, are the best kinds of food; and water, or milk, or weak wines, ought to be preferred for drinking.

Rules in a Light Atmosphere.

Light air, such as that which is found on the top of high mountains, is hardly fit for respiration, though, by custom, perhaps less inconvenience may be found from it. Many persons have suffered from their attempts to ascend lofty mountains, and almost all of them have experienced a shortness of breathing *. A plan has been recommended for preventing the inconveniences attending such excursions. It appears by a letter from Dr Hoppe, a foreigner, who, in August 1801, ascended one of the highest mountains in Europe, that such of the party as had taken the precaution of guarding the face by crape, were exempted from a variety of sufferings which the rest experienced. Dr Beddoes, therefore, imagines, that some defence of a similar nature, would always be serviceable in such excursions, and might be of use to invalids in other cases, in particular, those who

---

* It may be proper here to observe, that wherever there is a spitting of blood, it is a sign that the situation of the place is too high, and the air too light. The proper plan to pursue, therefore, is to fly to a flat or deep country, where the air is heavy. The weight of that sort of air must prevent the vessels from being swelled to any improper size, and the spitting of blood, which originated from the extension, must be removed.

are oppressed with what he calls the catarrh, or cough of old age, or debility *.

Rules in a Heavy Atmosphere.

Heavy air, such as that usually found on the surface of champaign countries, possessed of a dry soil, and not incommoded by woods or stagnant waters, is peculiarly well calculated for the human frame, provided it is not too dense. The men in such countries are stronger, and more capable of fatigue and labour, though not so light and active as the mountaineers, who breathe a thinner atmosphere.

In countries remote from the sea, the ingredients of the atmosphere must depend upon the nature of the soil; and where that is favourable, the air must necessarily be wholesome; more especially if the country is properly cultivated, [illegible] cleared of woods, and if it has many running streams in it, by which impure air is absorbed.

---

* See Hygeia, or Essays Moral and Medical, by Thomas Beddoes, M. D. Vol. II. p. 86. The Doctor strongly recommends this plan to those invalids who are afflicted with the chronic catarrh, as likely to enable them to take proper exercise, and to be frequently in the open air, which otherwise they might be under the necessity of avoiding. The great object is, to give heat and moisture to the air we breathe, when it is cold and dry. It is obvious, that the construction of the *muzzles*, (as the Doctor calls them), necessary for that purpose, ought to vary with the case. Each individual will soon find how many folds, of whatever material he may chuse to employ, will communicate heat and moisture enough to the air he breathes, without injury to the freedom of respiration. A similar idea seems to have occurred to Dr Hales, (Essays, p. 266.) who found that the air might be breathed much longer, when, in the act of respiration, it was made to pass through *mufflers*, or several folds of cloth dipped in vinegar, a solution of sea salt, or oil of tartar.—Arbuthnot on Air, p. 105.—Gregory's Econ. of Nature, Vol. I. p. 416. Perhaps such mufflers might be of use in cases of consumption, where the lungs are in so delicate or diseased a state, that they cannot easily bear the action of atmospheric air, without some such defence.

Rules at Sea[*].

In regard to sea or maritime air, some authors have denied its wholesomeness. They contend, that the salt and moist air breathed at sea, mixes with every thing that seamen eat, and must be the source of many disorders. It is also said to shrink up the fibres of their bowels, and to give them such a tendency to costiveness, that they require double the quantity of medicine, compared to persons of the same description who live on land [†].

If any circumstance can convince the thoughtless and the ignorant, of the advantage to be derived by rules for the preservation of health, it is from the benefit which has resulted to sea-faring people, by the system for preserving the health of seamen, first adopted by the celebrated Cook. Prior to the discoveries made by that truly great man, the life of a sailor was extremely hazardous, not only from the dangers of shipwreck, but from the certainty of his being subject to scorbutic and other complaints. Captain Cook saw the mischief, and thought he could find out the remedy. He fortunately accomplished what he intended. An abstract of his system I propose inserting in the Appendix, not only from its importance to this, and to all other maritime

---

[*] There are several good treatises on the diseases of seamen, and the means of preserving their health in particular, *Medicina Nautica*, by Thomas Trotter, M.D. printed in 3 vols. 8vo. I have also seen a valuable essay on the diseases incident to Indian seamen, or Lascars, in long voyages, by William Hunter, A. M. printed at Calcutta, anno 1804.

[†] Wainwright on Health, p. 109.

maritime countries, but also as it may furnish hints, by means of which the health even of persons at land may be preserved. To that paper is annexed some useful observations, by an intelligent physician, (Dr William Wright), on the system that ought to be pursued by officers going to the West Indies.

Miscellaneous Rules, connected with the Function of Respiration.

It remains to explain those rules which ought to be adopted, as connected with respiration and purity of air, during, 1. Infancy. 2. Youth. 3. Manhood. 4. Sickness; and, 5. Old age.

1. *Infancy.*—Infants, by their pliant and tender fibres, are more sensible of the impressions of air than adults; but, as they must afterwards endure them, they ought to be made hardy by all safe means; such as have been inured to the injuries of the outward air, and accustomed to a great simplicity of diet, are no more sensible of the injuries of outward air, than cattle. I know some remarkable instances of this *.

The air of cities is unfriendly to infants and children. Every animal is adapted to the use of fresh, natural, and free air; the tolerance of corrupted air, (as that of cities), is the effect of habit, which young animals have not yet acquired. The great mortality of children under two years of age, in London, is not entirely owing to the small care of the brood of the necessitous, and of natural children, but to the want of fresh air †.

---

* Arbuthnot on Air, p. 219.

† Ibid. p. 208.

To cover children's faces when they are asleep, is a very bad custom, for they are thereby deprived of fresh air *.

2. *Youth.*—The lungs of young people, in the prime of their age, are very tender, and, being in immediate contact with outward air, may be variously affected with its contents and qualities. The choice of air, therefore, is of great importance to pulmonics. In those of a more advanced age, the lungs are less tender, and more coreaceous or tough †.

It is particularly necessary to attend to the air breathed by young people in school-rooms and nurseries. Such apartments ought not only to be spacious, but well ventilated, which is seldom so much attended to at boarding schools as ought to be the case. Even in private families, greater care is necessary, more especially as servants in general, both from habit and prejudice, are fond of hot and close apartments ‡.

It is observed by Dr Willich, as an error of no small consequence in the modern system of education, that we generally endeavour to habituate our children to the support of cold weather only, whereas a constitution, properly hardened, ought to be inured to a great degree of heat as well as of cold. Hence children ought to be slowly and gradually accustomed to bear the inconveniences arising from extreme heat, which occur frequently, and are more dangerous, than those arising from sudden transitions to a

colder

---

* Faust's Catechism, p. 45. In Germany, the children are too often entirely covered up when asleep. In this country, the cradle-cover might often be removed with advantage.

† Arbuthnot on Air, p. 215.

‡ Adair's Medical Cautions, p. 52.

colder temperature; for the effects of the latter may, in a great measure, be obviated by warmer clothing, or by exercise and muscular action.

3. *Manhood.*—There is nothing more essential for a person in health, than to breathe the fresh air at least once a day[*]. The inhabitants of a town or city, in particular, ought to suffer no day to pass over, without enjoying the pure open air beyond their boundaries. A walk or a ride for that purpose, ought to be considered, not merely as the means of exercise, but of special importance, for procuring the enjoyment of the purest vital nourishment, which, above all, is indispensably necessary to those who are much confined to their apartments. By such daily enjoyment, people become acquainted and familiar with a free atmosphere, and are thus secured against one of the greatest evils which at present afflicts mankind, namely, too much sensibility in regard to all the impressions and variations of the weather. This evil is one of the most abundant sources of disease; and there is no other mode of counteracting it, but to harden one's self, by daily exposure to the open air[†].

---

[*] Every human creature, whose manner of life demands, and whose constitution can bear it, ought to inure themselves to the outward air in several sorts of weather.—Arbuthnot on Air, p. 206. Dr Willich also, in his Lectures on Diet and Regimen, p. 217, observes, that it is particularly necessary, frequently to expose ourselves to the changes of temperature which are so common in this variable climate. The cold will then neither feel unpleasant, nor impede the necessary perspiration, more especially if we are clothed properly, and take sufficient bodily exercise. Dr Short, (Observations on Bills of Mortality, p. 64.) says, that the consideration of registers proves how beneficial it is to inure our bodies to cold, and various sorts of weather.

[†] Dr Garnett properly observes, that going a short time to breathe the pure air of the country, every day, is much more effectual, than spending whole days or even weeks in the country, and then returning into the corrupt atmosphere of the town, and residing constantly in it.

This custom, also, it has been justly observed, will be of infinite advantage in regard to the eyes, as it is certainly a great cause of weakness and short-sightedness, that we are accustomed so much from our infancy to live within four walls, by which the eyes at length lose their whole power of seeing objects distinctly. Hence those who are the most accustomed to the open air, have in general the best eyes.

The advantages of fresh air, are happily exemplified by the following anecdote, related by a physician, of two sisters, whose system, in that respect, happened to be different.

The elder, Maria, was fond of reading or needle-work, and in general of every thing that suited a sedentary life. She was weak; her nerves were very irritable; and every change of weather affected her. She was perpetually obliged to have recourse to medicines, which, being good of their kind, would undoubtedly have had the desired effect in strengthening her constitution, had they been properly assisted by moderate and gentle exercise. But Miss Maria was always at home, always in the hands of a physician and apothecary, and always ailing.

Her sister Jane, on the other hand, was a very lively girl, and naturally possessed of good sense. She did not neglect to apply to her works and studies at proper times, but she had made it a rule to walk out whenever the weather permitted. Bad weather had seldom any other effect upon her, than to deprive her of her usual exercise. By these means she enjoyed an excellent state of health; and, whenever she happened to have any complaint, her physician had the satisfaction never to be disappointed in the effects of his medicines *.

---

* Valangin on Diet, &c. p. 49.

Justly, therefore, was it answered by an intelligent physician, who being asked what was the best rule for the preservation of health, replied, "*To be as much in the open air* "*as possible, without fatigue.*"

In walking for health, one should neither go abroad too late, nor too early. Before sun rising, the air is not so good, being then infested with noxious vapours, until its influence dispels them, and purifies the air; but, in fine summer weather, the morning air is wholesome, and much more pleasant and healthier than lying in bed *.

One of the greatest risks run during youth and manhood, arises from an unguarded practice of rushing from heated rooms into cold air; the difference being, in frosty weather, often between fifty and sixty degrees †. Many have suffered, even where they take the greatest precautions, but where it is done imprudently, the consequences are generally fatal.

4. *Sickness.*—Nothing could be more absurd, than the old mode of keeping out fresh air from entering the apartments of persons in sickness, or in a convalescent state, and, for that purpose, carefully and anxiously stopping, by lists, linings, and sand-bags, the smallest crevice by which it could be admitted.

Arbuthnot justly remarks, that innumerable mischiefs arise from keeping the air of the room of a feverish person too hot, and by depriving the patient of the benefit of refrigeration by cool air ‡, when it is well known by experience,

---

* Mainwaring on Health, p. 42.

† Adair's Medical Cautions, p. 53.

‡ If fresh air be necessary for those in health, it is still more so for the sick, who often lose their lives for want of it. The notion that sick people must

rience, that patients in fevers are anxious to breathe cool air, and will use their utmost efforts to come at it, by getting out of bed, &c. As the air in sick chambers must be rendered impure by the bad effects of animal steams, &c. every safe means ought to be taken to renew the air in a patient's room, giving it a free admission, by opening the door, the bed-curtains, and, in some cases, the windows, or letting it in by pipes, changing the atmosphere, without, at the same time, checking a due quantity of perspiration. The right management of the air, is in general one of the chief branches of regimen in all inflammatory distempers; and by the scrupulous care of ignorant nurses, in preventing the admission of fresh air, the disease is often increased, lengthened, and may ultimately prove fatal *.

There

---

must be kept very hot, is so common, that one can hardly enter the chamber where a patient lies, without being ready to faint by reason of the hot suffocating smell. How this must affect the sick any one may judge; no medicine is so beneficial to them as fresh air. It is the most reviving of all cordials, if it be administered with prudence. We are not, however, to throw open doors and windows at random upon the sick. Fresh air is to be let into the chamber gradually, and, if possible, by the windows of some other apartment.

The air of a sick person's chamber may be greatly freshened, and the patient much revived, by sprinkling the floor, bed, &c. frequently, with vinegar, juice of lemon, and any other strong vegetable acid. Buchan's Domestic Medicine, p. 74.

* See Arbuthnot on Air, p. 54. Also Curties's Essays on the Prescrtion of Health, 206. 207, &c. who loudly reprobates that killing with kindness, proceeding from a tender concern for the patient's safety, which shuts up every minute crevice, as if the neighbouring air was pestilential; and, further, depraves what the narrow enclosure affords, both by a constant plentiful fire, and the united breath of not a few compassonate visitants.

The improved practice of medicine in modern times, in regard to fevers, is to throw up all the windows, and to remove the curtains from the beds. In the fever ward of the Edinburgh Infirmary, and in some of the other hospitals, there is an ingenious contrivance, by which a constant current of cold air is made to strike against the roof of the ward.

There was a sect of physicians at Rome, known under the name of *Methodists*, who thought that the air we breathe is of more, or at least of as much importance, as our food, and were particularly careful to accommodate the air to the state of their patients. For that purpose, they made use of large or small apartments as they occasionally required. In fevers and inflammatory disorders, they not only carried their patients to apartments turned to the north, which the sun seldom visited, but sent them to grottos, and places under ground, and even sprinkled the floor with cold water, when coolness of air was particularly necessary. When warmth was required, the apartments fixed upon were those which fronted the south, and were warmed by fires and steams of aromatics. Even in modern times, the celebrated Boerhaave has recommended these practices in similar cases [*].

It is to be hoped, that, in the present improved state of chemistry and of medicine, some useful discoveries will be made, in the art of improving the atmosphere of sick chambers. Some have proposed fumigations for that purpose, by artificial fires of rosemary, juniper, laurel, cypress; and perfumes made of aloeswood, juniper-berries, and other aromatics [†]; but the effects of any thing that loads the air with vapours, when a person is in a weak and sickly state, must be doubtful. The steams of vinegar are certainly refreshing; and, in the opinion of a respectable physician, the steams of aromatic vinegar may be introduced into every sick chamber with great advantage*. Others have proposed warming a room by steam, but the moisture there is an objection, by which the body might be softened and relaxed, and too violent a perspiration excited. But perhaps pipes, to be heated by steam, might be so contrived as to obviate these objections.

---

[*] Burton's Treatise on the Non-naturals, p. 91. 92. Boerhaave, Aph. de Morb. intervariis locis. Such physicians, by working on the imagination, and giving hopes, even by an attention to trifles, might often be of singular service to their patients.

[†] Lynch's Guide to Health, p. 148.

The last suggestion that has been made for improving the air in sick chambers, is by means of a machine that would constantly keep in agitation a considerable quantity of water, which might be made on the principle of a shower-bath. Cold water has certainly a great tendency to purify the air, more especially when agitated; nor can any thing be more refreshing or animating than the air in the neighbourhood of a waterfall. If lime water were made use of, it would imbibe the fixed air, or carbonic acid gas, besides cooling the apartment. This plan might be adopted, in cases where the modern practice of bathing in cold water, for feverish complaints, could not be ventured on. The latter is certainly the most effectual, acting on the whole surface of the body, but the other might be of great service, as the cool air might be taken in by the lungs †.

To these, the following miscellaneous observations may be added.

---

* Perhaps the best mode of using aromatic vinegar, is to deposit a few drops of it, either on linen or cotton, which will soon impregnate the air of a large room.

† Struve's Asthenology, translated by Johnston, p. 413. It is said, that a room hung with tapestry, or some woollen manufacture, must be wholesome, by imbibing the steams of animals, fires, and candles, and other noxious vapours; but is there not a risk of the vapours being again emitted, if accumulated in very great quantities? Perhaps this might be one mode of improving the air of sick rooms, for screens made of cloth might be introduced, which, after they had imbibed the noxious particles in the apartment, might be taken out and ventilated. Arbuthnot on Air, p. 106.

It is remarked by Dr Adair, that many persons, who labour under chronic diseases, are distressed by an irregular fever, which, from the impure air they breathe for many hours in bed, is most troublesome in the night. He knew from experience that it is much abated, and sometimes entirely removed, by the admission of cool air; and the slumbers of the invalid become less interrupted, and much more refreshing. To such as labour under catarrhal coughs, which often terminate in consumption; to such also as labour under this disease in an advanced state; and to the asthmatic, this mode has been found singularly beneficial.

When a person lives in the country, and is recovering from sickness, sitting out of doors, on a piece of floor-cloth to keep out the damp, and a carpet to keep the feet warm, is a most excellent practice for valetudinary or delicate people.

Dr Cheyne recommends, that tender people, on the setting in of the easterly and northerly winds, ought to change their bed rooms for others of westerly and southerly exposures, and the contrary in wet seasons *.

These suggestions may seem of little importance, more especially to persons in health, but if they be all carefully observed by those who are in a sickly state, they must tend to promote their recovery; and even the occupation it furnishes to the mind, must be of service to the patient, hope being one of the most efficacious means of restoration.

Before this branch of the subject is dismissed, it may be proper to make some observations on the system of changing one's usual place of residence, and of going to what are called watering-places, or retreats for the diseased.

---

* Essay on Health and Long Life, p. 17.

A recent author has called these places, "receptacles for the dying, corresponding to charnel-houses, where desperate cases can be sent away from notice, and by which the credit of a baffled practitioner may in some measure be saved;"* and it must be admitted, that such a change, more especially in the case of consumptions, is not often attended with advantage. But still, as the change of air, the effects of new scenery, the benefits arising from the exercise attending the journey, and the hopes of relief, are sometimes attended with the best consequences, the system of going to such places ought not to be entirely given up; and it would probably have a much better effect, were it commenced at an earlier period of the disease. As travelling, however, to a remote place, must be extremely uncomfortable in the cold seasons of the year, if the journey cannot be commenced in favourable weather, it would be better to remain at home, (fitting up the apartments properly against the inconveniences of the winter season), than to be driven about in bad weather, and sent from one comfortless lodging to another, which often the healthy themselves find to be prejudicial.

5. *Old age.*—Galen calls old age *a natural distemper* †; and persons in that state, must require a different treatment from those who are young and vigorous.

Warmth is certainly essential for old age, and cold highly injurious; the circulation of their blood being already too languid, their fibres extremely stiff, and their humours sluggish, watery, glutinous, and cold.

---

* Manual of Health, p. 326. 327, &c.

† Terence makes nearly the same observation, "Senectus ipsa est morbus." Phormio, Act 4. Scene 1.

Experience proves how useful warmth is to aged people, for their state of health is much better in summer than in winter, and few of them die when the weather is fine.

Though purity of air is certainly desirable, yet it may reasonably be doubted whether men, who are advanced in years, and who have long lived in a crowded city, may not derive more injury than benefit, from retiring, when they quit business, into parts of the country where they are exposed much to bleak air, and to more cold than they have been accustomed to in London. They ought to consider, that habit is a second nature; and, that even bad things, to which an old man has been very long accustomed, are better than sudden and total changes.

It is impossible always to find a situation without some inconveniences; but for a person advanced in years, a warm and dry situation, is to be preferred to a damp and cold one; and in regard to soil, a gravelly one is particularly to be recommended. The best situation would be, towards the bottom of a gentle ascent; and if there be a running stream at that bottom, so much the better. In favourable seasons, old men may walk in the fields; but for common or precarious weather, a gravel walk ought to be formed near the house, open to the south-west, and well defended from the more dangerous quarters. Let it be laid tolerably round, that the water may not lodge in it, and let it be well rolled, hard, and smooth. Such a walk must be highly useful, as a place for exercise. But any aged person should never come upon it, till the dew is off the grass; and the setting sun should be the last object he sees from it, even in the best weather.

The air, early in the morning, and late in the evening, is cold and unwholesome; but some hours of the best part of each day, passed constantly on such a walk, would add many years to life; and, what is much better, would give health with them *.

The plan of having houses of a peculiar construction for aged or sickly people, in which the air would always be preserved at nearly the same temperature, has been already mentioned, and is sanctioned by the experience of those who have tried the experiment.

CONCLUSION.

I have thus endeavoured briefly to explain a very dark and complicated subject, from the full conviction, that there is no station of life, in which some knowledge of it may not be of use, and that a general acquaintance with it cannot be too generally spread, as peculiarly essential for the preservation of health, and the attainment of longevity.

CHAP.

---

* See the Old Man's Guide to Health and Long Life, 2d edit. p. 20. 21, &c.

CHAP. II.

OF LIQUID FOOD.

NEXT to air, liquid food is essential for the support of life. Without it no person can exist for any space of time, though instances are not wanting of individuals who have lived long without solid sustenance. Indeed, though the frame of man outwardly appears to be a solid body, yet in fact, (as the celebrated Mead justly remarks) it is *a hydraulic machine*, contrived with the most exquisite art, in which there are numberless tubes, properly adjusted and disposed, for the conveyance of fluids of different kinds, and of considerable amount *. Nay, the fluids greatly exceed the solids in point of weight; for it is calculated, that the quantity of blood and other fluids in a man, weighing 160 lib.

---

* Mead's Medical Works, p. 342.

must at least be 100 lib. and the solids not above 60 lib.*; and even in the solids, a considerable quantity of fluids is contained. Hence it is, that we ought to take a greater proportion of liquid, than of solid nourishment.

When these circumstances are considered, it must be a matter of astonishment, to find that so much more attention is generally paid by mankind, to their solid, than to their liquid sustenance. In regard to solid food, what pains are taken in rendering it marketable; what expence laid out in the purchase of it; what quantities of fuel are expended, and how many servants are employed in preparing it for consumption; and yet, after all, the preservation of our health depends fully as much, if not more, on what we drink, than on what we eat. The liquid part of our food certainly goes into our finer vessels, the purity and salubrity of whose contents, are surely of the most essential consequence to health; and if any disorders do attack them, they are, from their delicacy and minuteness, the most difficult to cure, and to put to rights. Let us consider, on the other hand, how little attention is paid, at least in modern times, to our liquid diet †. The wine we take is often adulterated, and consequently becomes the source of disease. Our malt liquors are often mixed with unwholesome ingredients: and, in regard to water, which, as a general beverage, is preferable to every other, even where it is contaminated by unwholesome ingredients, it is com-

---

[*] Keil's Essay on Animal Economy, p. 62.

[†] The ancients were much more attentive to this important branch of regimen, than the moderns are. It is hardly to be credited the minute attention paid by the former to the preparation of their water, and of their wine, for drinking. On this subject, see Barry's Observations on the Wines of the Ancients, where it is very fully and ably explained.

monly drank as it is found, without any trouble to purify or improve it. Hence, as a great voluptuary once contended, it ought to be accounted the most dangerous of all liquors, being almost constantly impregnated with putrid, mineral, or other noxious substances. Nor will these defects in the drink we take, be ever, it is said, thoroughly remedied, until we have domestic cooks for our liquid, as well as for our solid sustenance *.

There is one circumstance which greatly tends to deteriorate our liquid food, which is, that it is much more frequently the object of taxation, than our solid diet. The consequence is, that the due preparation of it is materially cramped and injured. The taxes upon wine, tempt the smuggler, or the wine-merchant, to make it of other articles than the genuine juice of the grape, and in various other ways to adulterate it. The high duties upon malt, and the liquors manufactured from it, have materially tended to injure, what otherwise would be a most wholesome beverage. The same observation is applicable to cyder, mead, &c. The liquids taxed, are generally accounted those of luxury; and financiers seem to think they do enough, when they leave the pure element without an impost; but though water is undoubtedly the most natural, and must always be the most general beverage of mankind, yet, if properly prepared, *by skilful liquid cookery*, other articles, when used in moderation, without injuring, and in many cases, even improving the health, may promote the comfort, may enliven the spirits, may diminish the chagrin, may alleviate the cares, and may increase the social pleasures of the human race.

---

* In particular, by preparing water for drink, in the manner that will be afterwards described.

Having premised these general observations, we shall now proceed to consider the various particulars connected with this branch of our inquiry, under the following general heads.

1. The necessity and uses of liquid food. 2. The different kinds of liquids commonly made use of; and, 3. The rules to be observed, as to the consumption of liquors, in regard to time and quantity.

I.—On the Necessity and Uses of Liquid Food.

The following observations will, in some degree, explain the nature and advantages of liquid food.

1. If the human frame be, properly speaking, a hydraulic machine, and consist more of fluid than of solid particles, it is evident, that liquid food is necessary to keep up that quantity of fluids which the body is constantly losing by perspiration and other means; and nature, wise and foreseeing in all she does, gives us notice, from time to time, of the indispensable necessity we have for drink, by exciting that feeling or desire known under the name of *thirst;* which feeling increases according to the quantity of fluid wanted: for in fevers, and in violent exercises, where there is an excessive waste of watery particles, the thirst, or demand for fluid, increases accordingly.

2. It is also proper to observe, that, besides the saliva, and the natural juices of the stomach, (which themselves would soon be exhausted, were it not for constant supplies of fluid matter), it is also necessary to take, at every meal, a considerable quantity of liquid, for the purpose of assisting in dissolving our solid aliment, and carrying on those operations which are necessary for the process of digestion.

gestion. Hence those who drink too little are apt to complain of indigestions.

3. The nourishing particles, even of our solid food, can only be conveyed from the stomach, into all the different parts of the body, in a liquid state. A sufficient quantity of fluid, therefore, (the due proportion of which will afterwards be considered), must be taken with every meal, to answer as a vehicle for so essential a purpose.

4. Without a sufficient quantity of liquor taken into the body, it is supposed that the blood would become too thick, and not fluid enough to be circulated throughout the smaller blood-vessels; hence, the animal functions would become languid, and obstructions must ensue.

5. There are salts constantly accumulating in the body, from the food we eat, or the air we breathe, which, if suffered to remain in the blood beyond what is necessary, must prove destructive. It is by means of the liquor we take, that these saline particles are washed away.

6. There is constantly, also, a small portion of the blood having a tendency towards putrefaction. But if putrescency were accumulated to any great extent in the blood, it would prove fatal. This is happily prevented, however, by means of our liquid food, which clears away all such impurities, and even prevents those concretions with which we might otherwise be afflicted *.

7. The drink we take, also tends to promote the necessary secretions, such as the bile, and the juices of the sto-

---

* People, in general, seldom consider how much we are indebted to urine for the health and purity of our bodies. Were the saline, putrid, and earthy substances, of which, by urine, our bodies are constantly freed, accumulated but for one week, the consequences would be fatal. When the body is in a diseased state, the urine clears away still greater quantities of these impurities, and the secretion thereof ought to be promoted.

mach, the importance of which, to the health of the individual, cannot be questioned.

8. The liquids we take, contribute also to keep the body in a due state of temperature. When too warm, the violence of the heat is abated by cooling liquors, by which some part of that heat is absorbed, though these must be taken with due moderation, and with proper precautions. Drinks also cool the constitution, by furnishing perspirable matter, the evaporation of which is the principal means of cooling the human body, when heated by labour in hot weather. When the body is too cold, on the other hand, liquors moderately warm, are found beneficial in reviving the heat that is required.

9. The liquids we take, are not only the vehicles of the nourishment we derive from our solid sustenance, but they also furnish, in some degree, nourishment themselves. Even water, if it has calcareous matter in it, is nutritious, for calcareous matter is necessary for the nourishment of the bones. If water be infused with bread, it becomes still more nutritious. Milk is certainly nourishing, and wine and malt liquors have that quality to a considerable, though in a lesser extent.

10. In the last place, our liquid food tends more than our solid, to stimulate the languid powers, to enliven the spirits, and to cheer the heart. When the body is exhausted, how refreshing is a single draught of a wholesome beverage. When the mind is borne down with care, how rapidly is it exhilarated by a cheerful glass: And when the whole frame is likely to sink under the pressure of disease, there is no medicine so likely, in certain cases, to restore it to its former health and strength, as the genuine juice of the grape.

Such are the uses of our liquid food, than which, nothing, in moderation, can be more salutary to the human frame, nor more destructive, if it is not kept within proper bounds.—Let us next proceed to the second head of our intended inquiry.

II.—ON THE DIFFERENT KINDS OF LIQUIDS COMMONLY MADE USE OF.

THE liquors commonly made use of, are of four different sorts: 1. Simple fluids. 2. Those which are compounded by art. 3. Fermented liquors; and, 4. Distilled, or ardent spirits. Each of these will require separate consideration.

1. THE SIMPLE FLUIDS.

THERE are two simple fluids used as food: 1. Water; and, 2. Milk.

1. WATER.

WATER, in its common state of purity, (for by distillation it can be rendered still more pure), is a fluid perfectly clear and transparent, without colour or smell, possessed of little elasticity, and in a very moderate degree compressible. It ought, as aliment, to be free from all foreign ingredients, excepting atmospheric air, and carbonic acid gas, or fixed air, which two elastic fluids it often holds in solution to the extent of $\frac{1}{28}$ part of its bulk of the one, and one cubic inch in the 100 of the other. If deprived of those two substances, (which is the case when water is recently boiled), it becomes vapid, for to them it owes what may be called its taste. To their presence also many of those beneficial effects which it produces, both on animals and on vegetables, ought to be attributed *.

Water, though apparently a simple fluid, yet, by chemical art, may, like air, be decompounded; and according to the most recent experiments, and in the terms adopted by modern chemistry, one hundred parts of water consists of 85 parts of oxygen, and 15 of hydrogen, or the basis of inflammable air.

Before we discuss the properties of the different sorts of water, it may be proper to consider what are the signs of good and of bad water, extracted from Vitruvius, and other authors who have entered into that investigation †.

Signs of Good Water.

1. It may be inferred, from the vigour and florid looks of the inhabitants who drink them, and from the healthiness of the animals living in the neighbourhood, that the waters they use are good in quality. 2. When a few drops of salubrious water are let fall on good copper, they will occasion no spot thereon. 3. Good water is found fit for boiling vegetables quickly, in particular, peas, beans, and other pulse. 4. Good waters are light; and perhaps lightness of water is the most positive token of its goodness, and its exemption from other ingredients. 5. Those wa-

---

* Thomson's System of Chemistry, Vol. III. p. 427. Mr Henry found that 100 cubic inches of spring water, contained 3.38 inches of carbonic acid, and 1.38 of atmospheric air.

† In particular, a work entitled, 'De l'Eau, relativement à l'Economie 'Rustique, par M. Bertrand,' &c. Lyon, 1764.

ters which dissolve soap in the completest manner are generally excellent. 6. Springs issuing from sandy soils, sandstone, gravel, and redstone, are generally wholesome. 7. Good water is soft, saponaceous, and totally free from smell. 8. Good water easily acquires the taste, colour, and flavour that is wished to be given to it. 9. Springs which freeze with difficulty, and suffer little variation in their temperature, at different seasons of the year, are deemed good. 10. Water of good quality soon grows warm by the heat of the fire, and soon cools when exposed to the air. 11. It is reckoned a good sign of river-water, when fresh verdure is observed along the banks where it runs. 12. Waters are good which produce water-cresses and water-marigolds. 13. If waters rather abound with fish, in particular if the fish appear healthy, and are found well tasted, it indicates, that the water which they inhabit may be used in diet.

Signs of Bad Water,

The following are signs of bad water: 1. Where the people are pale and unhealthy, and, in particular, where they are troubled with swellings in the throat. 2. Where the water, in a boiling state, will not soften peas and beans, and other pulse. 3. Ferruginous and vitriolic waters are unwholesome. 4. Waters that have a petrifying quality, or are impregnated with calcareous earth, are noxious; and, 5. All waters which have saline or sulphureous particles, are not proper for healthy people to drink as their common diluent.

One of the most difficult problems to determine, on the subject of our present inquiry, is, Whether what is called *hard water*, or the sort which has some acid, lime, or calcareous matter in solution, and which is unfit for being used with soap *, or for boiling vegetables, can with safety be used as drink, many people fancifully imagining that it has a tendency to promote the stone and gravel, and that, in other respects, it must be unwholesome.

There are probably few, who would not give a preference to soft, over hard water, for general use; at the same time, the authorities in favour of hard water, and the proofs adduced in its behalf, are so very satisfactory, and even convincing, that persons who have no other water to which they can easily have access, need not, on that account, entertain any apprehensions of danger from using it †.

Nor is it difficult to correct the impurities of hard water. If the acid, by which the earth is dissolved, be the carbonic, it may be purified by boiling; and if the water is exposed, after the calcareous earth is deposited, to the open air, in broad

---

* When soap is put into such water, its alkali is immediately attracted by the acid of the water, the soap is decomposed, and the oil of it swims on the surface of the water.—Encycloped. Britan. Vol. XVIII. p. 811.

† The celebrated Cullen, in his *Materia Medica*, in treating of the distinctions which are generally made between hard and soft water, declares, that he could never discover that hard waters were hurtful, or find out any clear evidence of the bad effects which have been ascribed to them. Dr Darwin, in his *Zoonomia*, goes still farther; for he was so much impressed with the utility of hard water, that he has classed it in the list of his *Nutrientia*, being convinced that calcareous earth must contribute to the nourishment of animals and vegetables, as such earth constitutes a considerable part of both. Dr Saunders also, in his *Treatise on Mineral Waters*, affirms, that the salts which give the quality of hardness to spring water, are always to be found, in one form or other, in the fluids of the body, and that in a state of the most perfect health. And a late writer, who has published some useful observations upon the composition and uses of the new sulphur baths at Dinsdale, in the county of Durham, (Mr Peacock) contends, that we would arraign the beneficence of an allwise Providence, to suppose, that all our pleasantest and most refreshing springs are laden with disease; for the hard waters are always the most palatable, and, (in the opinion of men who have studied nature), the most salubrious.

broad shallow vessels, it thus recovers a portion of the air which was expelled by the boiling, and is rendered agreeable to the palate. If the earth is suspended by any other acid, a solution of potass, or any other alkali, may be poured into the water, till it cease to produce any turbid appearance. The water must then be decanted from the sediment, or filtered if necessary *.

Water may be divided into two kinds, *Common* and *Mineral*.

By common water, naturalists understand those sorts, which have no perceptible distinguishing taste or smell, and which exert no particular or sensible effect on the human body, when internally taken; consequently, they are peculiarly well calculated for diet.

Mineral waters, on the other hand, have properties directly contrary, and are never, except from necessity, used as aliment †. They will not, of course, require any particular discussion upon the present occasion ‡.

COMMON WATER.

In regard to common waters, they may be considered under the following general heads: 1. Rain. 2. Snow. 3. Hail. 4. Ice. 5. Spring. 6. Well. 7. River. 8. Lake. 9.

---

* Encycloped. Britan. Vol. XVIII. p. 811.

† Falconer's Observations on the Water commonly used in Diet at Bath, p. 8.

‡ Mineral waters, however, being of importance, on many occasions, for the recovery of health, it is proposed to make some observations upon them, in a distinct paper, in the Appendix.

9. Marsh; and, 10. Pond-water; to which will be added, some observations on the rendering sea-water fit for being used in diet.

1. *Rain-Water.*—In favourable circumstances, rain-water ought to be as free from foreign ingredients, as any that has not undergone the process of distillation. Having ascended into the upper regions of the air in the shape of vapour, and being thus in a manner *distilled by the heat of the sun*, it must, when it descends, be light and pure, if it does not meet with noxious substances in its descent, which, however, is far from being unlikely, in consequence of the various heterogeneous particles with which the atmosphere abounds. Hence it is found to differ greatly, according to the season of the year, and the manner in which it is collected.

To obtain it in its greatest purity, it should, as Neumann directs, be collected either on the tops of mountains, or in open plains, and not when the rain begins, but after a considerable quantity has fallen, that the lower air may be purified from such heterogeneous bodies as may have floated in it. The winter, or very early in the spring, is esteemed the best season of the year for obtaining pure rain-water, as the atmosphere has been cleared by the winter rains; and few insects are generated at that season, or flying about in the air, as is the case in the summer months. The rain, also, which falls after a long tract of wet weather, must be pure, for the atmosphere is then, in some measure, *washed*, if that expression may be made use of, from all heterogeneous substances.

As rain-water is often impregnated with various sorts of exhalations and effluvia, with the pollen of flowers, and the ova of animals, &c. if allowed to stand in a vessel, it soon putrefies, and produces various sorts of animalcula.

Hippocrates, therefore, and other medical authors, strongly recommend its being boiled and strained before it is used; but if it is collected in the manner above described, such operations will not be necessary *.

2. *Snow-Water.*—In certain cold climates, and in high latitudes, thawed snow forms the constant drink of the inhabitants during the winter season. In the Alps, where this is necessarily the case, many of the inhabitants are deformed with swellings in the neck, which have been often imputed to the use of snow-water; but such swellings are probably owing to some mineral matter with which the water is impregnated, or to some other cause than the use of snow-water; for the same disease is frequent in Sumatra, where ice and snow are never seen, and quite unknown in Chili and Thibet, though the rivers of these countries are chiefly supplied by the melting of the snow, with which the mountains are covered †.

A great prejudice is entertained against snow-water, because the use of it is expressly condemned by Hippocrates and Celsus. But were this water unwholesome in the countries where they lived, where the snow might be impregnated with various noxious exhalations, peculiar to

---

* There is often a small quantity of muriat of lime in rain-water; but Morveau has ascertained, that it may be rendered sufficiently pure, even for chemical purposes, by dropping into it a little barytic water, and then exposing it for some time to the atmosphere, and allowing the precipitate formed to deposite.—Thomson's System of Chemistry, Vol. III. p. 427.

† Quincey's Medical Lexicon by Hooper, *voce* Water. These swellings, it is now almost decided, are owing to the *tufa*, a volcanic production, and they are only found in the inhabitants of the banks of rivers which contain that substance.

Greece and Italy, yet the same observation might not be applicable to other regions. In Greece, in particular, even the rain-water, it appears, could not with safety be made use of, without being boiled and strained; and the same process might have removed the objection to the use of snow-water, which, in fact, is nothing but frozen rain. When immediately melted, indeed, snow-water contains no air, as that substance is expelled during freezing, consequently, it is remarkably vapid, but it soon recovers the air it had lost, by exposure to the atmosphere *. If made from snow that falls in calm weather, it is the purest of any, next to distilled water, and will keep good for many years. It will also dissolve soap better, and will sooner boil and cool again, than almost any other †.

3. *Hail-Water.*—Among the various sorts of water, that from melted hail ought to be peculiarly pure; for the lightest parts of water ascend to the highest regions, and are there congealed, (without any kind of mixture with other particles), into one homogeneous substance, and put in a form which cannot easily partake of impurities ‡.

4. *Ice-Water.*—Ice may either be formed from fresh or

---

* From its want of air, no fish can live in snow-water, until it has been exposed to the atmosphere.

† Burton's Treatise on the Non-Naturals, p. 238. Barry in his Observations on the Wines of the Ancients, p. 392, states, that, from experiments which have been made on water, collected from the purest snow dissolved on the highest mountains, and the best common water, it appears that the former possessed several peculiar and very different qualities, and must, from thence, be more salutary.

‡ Burton's Treatise on the Non-Naturals, p. 237. Also, Willich's Lectures on Diet, &c. p. 392.

salt-water. As to the first, we find it placed by Celsus, in the fifth rank in regard to wholesomness, or after rain, spring, river, and well-water *. As to the second, in a a work written many years ago, by a Danish author, (Bartholinus, de nivis usu), it is stated, that if the ice of sea-water be thawed, it loses its saltness, which was ascertained by a professor in the University of Copenhagen; and a British writer, whose work was published in the year 1738, takes notice of that observation, and adds, that thawed ice, from sea-water, is often used at Amsterdam for brewing †. Sir John Pringle, therefore, was mistaken in supposing, that the celebrated Cook was the first who discovered that frozen sea-water thawed into fresh ‡. At the same time, that illustrious navigator was most probably ignorant, that any other person had previously made the same discovery.

5. *Spring-Water.*—Under this general head, are comprehended all those waters that arise from any depth to the surface of the earth, and are used, either at the fountain-head where they spring, or at least before they have run any considerable distance. These certainly ought to be as pure, and in some respects purer, than rain-water, from which they generally originate, being in a manner filtrated in the earth, if it were not, that in their passage through the soil, they meet with various soluble bodies, and hence are impregnated with mineral and other particles.

---

* Grieve's Celsus, p. 97.

† Burton's Treatise on the Non-Naturals, p. 238.

‡ See Pringle's Discourse on some late improvements upon the means of preserving the Health of Mariners, p. 34. The fact is, that the salt does not freeze, the frost only affecting the fresh particles of salt-water.

They are generally clear and pleasant to the palate, owing to the fixed air which they commonly contain; and they keep well, not containing any substance capable of putrefaction; but, on the other hand, they are sometimes unfit for many uses in diet, from their metallic, saline, and earthy impregnations *.

Some authors imagine, that the quality of springs varies, according to the aspect of the ground where they rise; but others, with more judgment, dwell on the nature of the soil through which they pass, condemning those which arise in mineral countries, and preferring such as flow from gravel or fine white sand. Springs in a clay soil, generally produce hard-water, unfit for several of the purposes of diet. The quality of springs in rocky situations, must depend on the nature of the rock from which they flow †.

6. *Well-Water.*—Where springs are not be met with, it is often necessary to dig deep pits into the bowels of the earth, for the purpose of finding water; and where the quantity is not sufficient to overflow the mouth of the well, pumps and other means are made use of, for the purpose of raising the water to the surface. Well or pump-water must greatly resemble spring-water, being derived from the same source; but it is more liable to be impregnated with foreign ingredients, in consequence of its stagnation and slow filtration. Hence, the more frequently that it is used the better. The water of wells is generally hard, but it has often the advantage of containing a greater quantity

---

* Falconer's Essay on the Water commonly used in Diet at Bath, p. 22. & 23.

† This subject is very fully discussed in Falconer's Essay, above quoted.

of fixed air, or carbonic acid gas *. In some places they have dug wells to no less a depth than 500 feet, and been amply repaid for the trouble and expence, by the purity of of the water thus attained. It is a fact, which cannot be too well known, communicated by an intelligent apothecary, residing at Malden in Essex, that, in consequence of a well having been sunk to nearly the depth above mentioned, and good water procured, the inhabitants of the parish of Steeple, in Dengy Hundred, were so much improved in their health, that, in place of receiving from many farmers in that parish, the sums of 20l., 30l., and 40l. yearly, he does not now take as many shillings †.

7. *River-Water*.—That there are certainly some objections to the water of rivers, as containing all the natural impurities of the springs whence they proceed, of the rain-water,

---

* Thomson's System of Chemistry, Vol. III. p. 429. There are many useful works on well or pump-water, as Heberden's Observations on the Pump-water of London, (Medical Transactions, Vol. I.); Percival's on that of Manchester, and Falconer's on that of Bath. Dr Heberden asserts, that most of the pump-waters used in London contain lime, and the three mineral acids of vitriol, nitre, and sea-salt, besides an oiliness, which discolours them, and gives them a remarkably yellowish cast, when compared with pure distilled water. They are also liable to be tainted, in their passage under ground, by various impurities, so frequent in the neighbourhood of so large a city. The nitrous acid in these waters, makes the flesh boiled in them to become red. The tea and coffee infused in them are not palatable; and many physicians suspect, that they occasion many disorders, more especially among the infirm and children. There is also a work on pump-water, recently published, by Dr Lambe, which merits attention, though he carries his apprehensions, regarding the wholesomness of pump-water, much too far.

† See communications from Dr Kirkland, Code of Longevity, Vol. II. Appendix, p. 215. where, by mistake, the town is called Walden, instead of Malden.

water which they ultimately receive, and of the filth thrown into them from the surface of the earth, from populous towns, extensive manufactures, and various other means, as the fæces of the several kinds of creatures which live therein; yet, on the whole, there is no water better calculated for general use. Indeed, where their motion is rapid, and their bed either gravel or silicious sand, they are said to be purer than even spring-water, depositing every thing during their course, which was merely mechanically suspended, and retaining nothing more than the usual proportion of air and carbonic acid gas, and perhaps a very minute quantity of calcareous matter, and of common salt. Some rivers, however, like the Thames, in passing through rich and cultivated plains, become considerably charged with foreign matter; and though remarkably pure in regard to saline particles, yet are fouled with mud, and vegetable or animal exuviæ. Such water, however, is easily improved by filtration; or when left to settle, will become as clear as spring-water. This renders such water peculiarly calculated for sea-store; for, though at sea it becomes sooner putrid than any other, if it is racked off into large earthen vessels, and exposed to the air, it gradually deposits a quantity of black slimy mud, becomes clear as crystal, and remarkably sweet and palatable *; others, however, would prefer as sea-stores, water which was longer of becoming putrid, that is spring-water, even though it were a little hard.

---

* See Thomson's System of Chemistry, Vol. III. p. 428. Hooper's Lexicon, &c. Dr Heberden states, that if two or three grains of alum are dissolved in a quart of thick river-water, it makes the dirt very soon collect, and slowly to precipitate: If then filtrated, it is immediately prepared for use.

8. *Lake-water.*—The water of lakes is merely a collection of rain and snow-water, spring-water, and river-water, and of course must be impregnated with the same heterogeneous substances which they contain. It is seldom so transparent as river-water, as it must, in some degree, be contaminated with the remains of animal and of vegetable bodies which have undergone putrefaction in it. But as the water of lakes is not so much agitated as that of rivers, such substances frequently subside to the bottom, and do not injure the surface. It must be owing to this circumstance, and to its great depth, that some of the finest water any where to be met with, is at Lochlomond, by far the largest, and most beautiful lake in Scotland. Those who live upon its borders, by a very easy process, which might be adopted in other places, obtain it in the greatest purity. Instead of taking it from the lake itself, they make a pit or hollow in any bank of gravel on its margin, into which the water naturally flows; it is thus filtrated through the gravel, and cleared from any injurious particles.

9. *Marsh-Water.*—Marshes are shallow lakes, with a great quantity of earth diffused through them; and the water which they produce is peculiarly unwholesome, containing a greater proportion than any other, of animal and vegetable matter, and generally in a putrid state. Boerhaave took twelve ounces of such water, put it into a clean glass vessel, and having evaporated it by a gentle heat, many worms, insects, and animalcula of different sorts, besides a quantity of earthy slime, were found at the bottom*. Such water may be greatly improved by boiling and filtration,

---

* Burton on the Non-Naturals, p. 239. 240.

and by proper means, to be afterwards explained, may be rendered even palatable and wholesome.

10. *Pond-Water, &c.*—From the want of springs, lakes, or rivers, the inhabitants of some countries are often under the necessity of collecting rain-water in ponds and ditches, as the only means of supplying themselves with so essential an article. Such water is rarely good. Being in an open and a stagnant state, it is liable to collect a variety of impurities. This must affect the health of those who have no other resource; and hence, the diseases to which such persons are liable, is as much to be attributed to the unwholesomeness of the water they drink, as to the malignity of their atmosphere.

11. *Sea-Water freshened.*—The only other means of procuring water for diet, is by rendering salt-water fresh. It is said, that Peter the Great made many trials, gradually to accustom his subjects to drink sea-water in its natural state, but as many died in the course of the experiment, he was obliged to abandon the idea. On some occasions, sea-water may be used for dietetical purposes; for instance, in boiling potatoes, and other vegetables; and, since the increase of the duties upon salt, many poor people in Scotland, who live upon the borders of the sea, have got into the practice of boiling down sea-water into a kind of pickle, and using it, instead of salt, with their oatmeal porridge. In regard to freshening sea-water, unless it can be frozen, the most effectual mode is by distillation, which has been carried to such perfection, that Parliament very liberally rewarded the person by whom this process was principally improved *. It is a matter which ought to be attended to

---

* Lord Bacon and others have asserted, that sea-water, if filtrated through

in carrying on that process, that the surface-water of the sea, or near the shore, has a bitterness of taste, owing to the animal and vegetable bodies with which it is mixed, whereas, at any considerable depth, it is free from these ingredients.

Having thus gone through the various sorts of water, it may next be proper to consider, 1. The means of conveying it from any distance. 2. The means of preserving it for use. 3. The different modes of improving it; and, 4. The arguments which are commonly made use of in recommendation of this favourite beverage.

1. *Mode of Conveyance.*—It is in vain that pure water is discovered in the neighbourhood of any town or city, if proper means be not adopted to convey it for the use of the inhabitants. In ancient times, this was done by means of aqueducts, and it is incredible the expence to which the ancients put themselves on that account; but since the principle has been ascertained, that water will rise to its own level, such stupendous works are no longer necessary. As water must be affected by the materials of the reservoirs, or cisterns in which it is kept, and the pipes through which it flows, it is a circumstance hardly to be credited, that lead should be so much employed for those purposes, though the deleterious qualities of that metal are so well known. If the water conveyed is derived from springs which are perfectly pure, the pipes, it is said, become, in process of time,

---

through sand *twenty times*, would at last become quite fresh; but this can hardly be the case to any height of purity, though it may be greatly improved by that process.

time, coated with calcareous matter, which prevents their being injurious; but if the water contains any animal or vegetable substances, capable of putrefaction or fermentation, it becomes actually pernicious, more especially if it is kept in cisterns of lead. Timber pipes are liable to decay, and apt to give a bad taste to the water, unless when they are charred. On the whole, pipes made of cast-iron are to be preferred, on account of their durability; and though they may give a ferrugineous taste to the water, it can hardly be discovered, it is so slight.

2. *Mode of preserving Water.*—This is a subject of material consequence in a view to health. The usual mode of preserving water in cisterns of lead, cannot be too strongly reprobated. The fatal effects arising from it, has been proved in a variety of instances *. There are some objections even to the use of wood †. Free stone or marble would certainly be preferable. There is an excellent mode of preserving water, and by which it is filtrated at the same time, adopted at Paris. The water is put in what is called a *fountain*, which is a large and strong earthen jar, about four feet in height, placed on a wooden pedestal. At the bottom, there is gravel to the height of six or eight inches, which should be cleared once a year. The fountain may be had for a Louis-d'or; and the waterman receives a trifle for filling it twice a week, which is sufficient for the generality of families. The water, thus filtrated through the gravel, becomes as pure as crystal, and is drawn by a cock, at the bottom of the

---

* See Manual of Health, p. 352, 354, &c.

† Ditto, p. 360.

the fountain. As the water of the Seine is rarely pure, and in a dry summer even noxious, such a machine is very convenient, and even indispensable. It is not liable to the many accidents, and constant wear, of our filtering stones, nor does it require the attention of those with charcoal, recently invented at Paris *. It certainly would be of the highest importance, to have so simple, but so useful an article, introduced into this country.

Another mode of preserving water in distant voyages, is, by charring the vessels in which it is preserved. This is taken notice of in a recent French publication †, but has long been practised in England, and is no new discovery.

3. *Modes of improving Water.*—There are six modes by which water, without infusing any article to be retained in it, may be improved; namely, by 1. Boiling. 2. Cooling. 3. Distilling. 4. Filtrating. 5. Charcoal; and, 6. Machinery.

1. It is hardly credible the expence laid out by the ancients, in procuring the best kind of water for their general use; being convinced that their health greatly depended on the purity of this universal diluting fluid. But this was not considered to be sufficient, after it was thus obtained, it was thought necessary to have it boiled and prepared for use; and even public buildings were erected for that purpose. These places were called *Thermopolia*, from those of the same kind in Greece; and there the boiled water was publicly sold, both for drinking by itself, or mixing it

---

* Pinkerton's Recollections of Paris, Vol. I. p. 521.

† Annales de Chymie, July 1806, Tome 95.

with wine *. Herodotus also mentions, that, when the King of Persia went with his army on an expedition, he drank no water but what had been taken from the river Choaspes, which, being first boiled, and afterwards received in silver vessels, was conveyed in four-wheeled machines, drawn by mules, wherever he went, and kept solely for the use of the king †.

On the subject of boiling water, it is further to be observed, that, wherever there is any reason to doubt the purity of water, or to apprehend that it may be impregnated with putrid and other noxious ingredients, there is no mode by which it can be so easily improved, as by the simple operation of boiling, more especially if it is afterwards strained or filtrated, and then suffered to cool. In China, however, they carry this idea still further; for it is the universal practice there, to take all their liquors warm, considering cold liquids unnatural, as the fluids of the body are warm: nor do they account it a sufficient answer to this argument, that all the warm-blooded animals, except man, must necessarily drink cold water. Their water is boiled with tea, whilst any bitter remains in the leaves, which, joined to the operation of boiling, contributes greatly to the quick deposition of those earthy particles, with which the water, in all the flat provinces of China so much abounds ‡.

Boiling hard or pump water, however, is not alone found to be sufficient; for though it makes it to part from the

---

* See Barry's Observations on the Wines of the Ancients, p. 156. and 160. He there gives, from Baccius, a plan of a Thermapolium, "cum "miliariis vasis cale faciendi aquas ad usum potuum cum vino et frigida."

† In Clio. cap. 1. Athenæus, lib. 2. cap. 2. confirms this account, and explains the manner in which this royal water was conveyed and preserved, and says it was of the lightest and most grateful kind.

‡ Barrow's "Travels in China," p. 547.

earthy matters which were dissolved in it, yet it becomes more strongly impregnated with the saline matters which it contains, and, therefore, it will become worse. But if, besides boiling, 10 or 15 grains of any alkaline salt, *per* pint, are boiled with it, according to Heberden, all the noxious qualities of pump-water would either be precipitated to the bottom, or rendered innocent.

The principal objection to boiling water is, that whilst it removes some noxious ingredients, it also expels two useful substances, common air, and carbonic acid gas or fixed air, which, to a certain extent, is of service. But it will afterwards appear, that these two substances can again be replaced in water, and that the vapid taste of boiled water can be improved.

2. After the ancients boiled their water, they were accustomed to cool it, by immersing the vessel containing it in snow or ice. *Alexander* in his Indian expedition, at the siege of *Petra*, directed thirty pits to be made as reservoirs for snow, which were covered with straw, to defend it against the external air; with this his wine and water were cooled. *Galen*, who was long acquainted with this method of preparing the water in his own country, particularly recommends it; and says that the custom then prevailed at *Rome*, of preparing their water, by first boiling it and afterwards cooling it in snow, and that it was then called *decocta* *. This distinguishing term, therefore, not only denoted cold water, which had been boiled, but that which had been afterwards made more exquisitely cold, by being cooled with ice or snow †.

3.

---

* Meth. Med. Lib. vii. cap. 4.

† Juvenal, in Sat. v. V. 50. celebrates this mode of cooling water; and

3. The nature of distillation, or the chemical process resembling evaporation, by which the volatile principles of bodies are separated from the fixed or heavy, by means of heat, is well known. It is thus that ardent spirits are made; and if the steam or vapour that arises from water, when in a boiling state, is collected by proper instruments, the water which is thus produced, is purer than any other, and so uniform, in regard to that essential quality, lightness, as to become a standard for weight *. The specific gravity of distilled water is always supposed 1,000, and it is made the measure of the specific gravity of every other body †.

Distilled water, on account of the trouble of procuring it in large quantities, is seldom employed to any extent, either in the preparations of food, or as drink; but for preparing a great number of medicines, and in almost every one of the nicer chemical processes that are carried on in the liquid way, this species of water is an essential requisite ‡. And Heberden is of opinion, that a course of distilled water, might be as beneficial, in many chronical pains of the stomach and bowels, as the most celebrated mineral waters are in other disorders; and hence, that it might prove no inconsiderable addition to the Materia Medica.

Some

---

and Martial, Lib. xiv. Ep. 116. distinguishes this water by the appropriate name of *nobile frigus*.

[*] Wainswright, in his Mechanical Account of the Non-naturals, p. 211. condemns boiling water, as the means of evaporating the best parts of the liquid; adding, that water may be so much boiled as to have a saltish taste. If this observation is just, regarding boiling, it is certainly in favour of distilling water.

[†] Thomson's System of Chemistry, Vol. I. p. 569.

[‡] Quincy's "Lexicon Medicum," by Hooper, *voce* Water. Also Heberden on Water. "Medical Transactions," Vol. I. p. 16. There are several medicines, which cannot, with propriety, be made with any other than distilled water.

Some instances are given, of persons having used distilled water as their common drink, who are said to have found benefit from it *; and by condensing the steam of salt-water, it has been obtained at sea in considerable quantities. It acquires, however, a bad taste from the still †; and if any vegetable essential oil was in the water when boiled, it will remain in it after distillation. It loses also, in a great measure, its atmospheric air and elastic fluids; and hence becomes extremely vapid. The taste of such water, therefore, cannot be palatable, having, according to a common expression, *no heart in it;* and the taste of it is said to have occasioned a torpor in the stomach and bowels, a loss of appetite, and other dangerous complaints‡. On the whole, from the trouble and expence attending this sort of water, and the other objections above alluded to, there is very little chance of its ever coming into general use. At the same time, the sentiments of the judicious Heberden are entitled to attention, who recommends distilled water to be used in any of our foreign possessions, where the waters are found to be very injurious to health, and where it is hardly possible, otherwise, to get water barely drinkable.

4.

---

* Adair's "Medical Cautions," p. 236. Tournefort mentions one Francis Secardi Horgo, who made distilled water his only drink, without any addition of wine, or any strong liquor, to the last, and lived, with remarkably good health, to the age of 115 years. Heberden on Water, p. 22.

† The empyreumatic or burnt taste, in distilled waters, may be cured in various ways. 1. The first gallon, having the most of that taste, should be thrown away. 2. In a month's time, by mere keeping in perfectly clean glass or stone bottles, thoroughly well stopped, the taste will be got rid of. 3. By ventilating the water, in the manner described by Hales, the taste will also be carried off in a few minutes; or, 4. By boiling the distilled water in an open vessel, the burnt taste will be immediately taken off.

‡ See Peacock's "Observations on Dimsdale Water."

4. The idea of filtrating water is pointed out by nature itself; for all springs arising through sand, gravel, &c. must undergo that process. Hence it occurred, that if waters of a putrid, marshy, or unwholesome nature, were filtrated through a factitious bed of sand, or a vessel made of porous stone, they might be deprived of their bad qualities. Sometimes, also, water has been much improved, by passing through branches of green fir-trees, retaining their sharp pointed foliage, by which the viscous and noxious particles in the water are intercepted. But, on the whole, filtration by sand, or porous stones, has been found preferable *.

Filtering stones, or reservoirs, are either small, calculated merely for the use of a single family, or on a great scale, adapted for a great town.

The smaller sorts of filtering stones, where the water passes downwards, are very apt, in process of time, to be clogged with dirt and other impurities. I was thence induced to incur some expence, in making filtering boxes, separated into two divisions, with the view of forcing the water, by means of the pressure of the atmosphere, *to ascend through a stratum of sand*, instead of descending, imagining it was a new invention; but, upon further inquiry, it appeared that it had been previously thought of.

Filtrating water, however, may be successfully carried on, not only for supplying single families, but also on a great scale, for the use of any number of people; and I am happy in an opportunity of laying before the public an extract of a letter from the Reverend Robert Boog, minister of Paisley, in Scotland, describing the mode in which a town, containing above twenty thousand inhabitants, who were formerly in a distressed state, from the unwholesomeness of their water, are now plentifully furnished, with that most valuable article, in very great perfection*.

---

* For this, and some other observations on the subject of water, the author is indebted to a valuable work, entitled, "De l'Eau, relativement à "l'Economie Rustique, par M. Bertrand," Lyon, 1764.

[illegible] 5.

---

* "The idea of furnishing the inhabitants of Paisley with good water, occurred to a gentleman in this place, only in consequence of the plans which he had executed for the improvement of his bleaching grounds. As the measure has been attended with success, and may easily be adopted in other towns, similarly situated, it is not unworthy of attention.

"The bleaching grounds lie along the river Cart, a little way above Paisley. The water of that river being often muddy, and bringing down much stuff from printfields, lime-works, copperas, and alum-works, situated on its banks, is altogether unfit, in its usual state, for bleaching. This suggested the idea of filtrating it: an operation not uncommon, but perhaps no where so completely executed as here.

"A well, about 25 yards from the river, and sunk below the level of its bed, receives its water by a covered cut. This cut is about eight feet wide, and four deep: it is filled with chipped free-stone, which are broke smaller as it approaches the well. To prevent the intermingling of the earth, they are covered with Russia matts, over which the ground is levelled. A great deal of the filtering is effected by this first and simple operation. Over the well is a small steam-engine, which raises the water to an air-chest, whence it is forced to the "external trench of the bason," higher than the engine, and distant perhaps 60 or 70 yards. The air-chest may be about 16 feet above the river. The communication from it to the trench, is by a wooden-pipe of Scots fir, of three inches bore. From the trench the water filters into the bason. The bason is a circle of about 23½ feet diameter, and 10 deep, sunk perhaps about two feet below the level of the ground; its bottom of puddled earth; its side, a wall of free-stone, neatly jointed, but laid without cement. It is surrounded by a bed of sand, or very fine gravel, about six feet wide, the same depth with the bason, and retained by a wall of free-stone ruble without cement; and like the former, about a foot thick. A second bed of gravel surrounds this wall, of the same width and depth as the other, but the gravel coarser, and retained by a similar wall to the former. The water-trench succeeds: about six feet wide, of the same depth with the bason; the bottom of puddled earth, as are the bottoms of the sand-beds. The outer wall of the trench is double; the interior one, hewn stone joined: the exterior, thick whin-stone. A space of about 16 inches between them is [illegible] rammed

5. Another mode of improving water, and the one that has been most recently discovered, is by means of charcoal, a substance which enjoys the property of preserving water from corruption, and of purifying it after it has been corrupted. It has been found, that one ounce and a half of powdered charcoal, and twenty-four drops of oil of vitriol, (concentrated sulphuric acid), are sufficient to purify three English pints and a half of corrupted water, without

---

rammed with clay or puddled earth; a coping of hewn stone covers both in: the outside is faced with earth and turf, and gradually sloped to the level of the surrounding ground. All the stone, employed in the first communication from the river, and in the walls, is carefully picked from quarries perfectly free from any metallic tinge. From the bason, a pipe is carried below the sand-beds, to a distance of perhaps a furlong, to where a declivity in the ground gives opportunity to drive a cart below the mouth of the pipe, where a large cask placed upon it, is commodiously and expeditiously filled. The cask contains about 480 gallons, wine-measure. Two carts filled with such casks are constantly employed, and go seven times each day through the town. Two pails full of this filtered water were, at first, sold for a halfpenny. This, however, it was found, would not defray the expence. Three farthings are now paid for that quantity; but if any considerable quantity is bought, some gallons are allowed in addition. This is some addition to family expences; but, for pure water, all who value health will willingly pay at this rate: and, as it is brought to almost every door, to those who are at a distance from wells or the river, there is a considerable saving of time and labour. This plan is susceptible of improvements; but it is sufficient to demonstrate, that no town near a river, need be destitute of good water. It has not occurred to me to ask, whether the filtered water has been subjected to any chemical tests; but, to the eye and the taste, it is perfectly pure: and while the water immediately from the river, when boiled and left to cool, deposits a thick sediment, the filtered water gives none. The air-chest is a contrivance employed for forcing up the water in the engine for extinguishing fire. The water is driven into the receptacle, (which is called an air-chest), by a forcing-pump, and its return prevented by a valve opening inward. A pipe is inserted into the top or side of the chest, with its mouth near the bottom. The compressed air acting on the surface of the water, forces it through this pipe." A similar plan has since been extended to Glasgow; and the water of every town, in every civilized country, ought to be improved in the same way.

out communicating to it any sensible acidity. If no acid be used, two thirds more of charcoal powder will be necessary; but when less of that powder is employed, the less is the quantity of water lost by the operation; which, in sea-voyages, is a material object. Other acids produce nearly the same effect, and even nitre and sea-salt; but sulphuric acid is preferable. A small quantity of it should be added to the water, before the charcoal powder is put in. If a quantity of that powder were put in the casks intended for holding water for long voyages, or if the inside of the casks were charred, it would prevent the water from putrefying. It is said, also, that filtrating water through charcoal, has been found an excellent mode of purifying it *.

6. Another mode of improving water is, by means of machinery. It is well known, that, by pouring water from one vessel to another, it improves; and the more it is agitated and put in motion, the more it acquires the qualities to be desired †. If, therefore, it were frequently to pass through the air, by means of machinery, water that had been distilled or boiled, and thus had lost its elastic fluids, might be again impregnated with the beneficial qualities of the atmosphere. Machines, on the principles of shower-baths, might be employed for so useful a purpose.

---

* See Encycloped. Britan. Vol. XVIII. p. 816. It might be worth trying, whether butcher-meat, also salmon and other fish, might not be preserved fresh in water, plentifully mixed with powdered charcoal, and with perhaps a small quantity of oil of vitriol. Lowitz has made some valuable observations on this interesting subject. Might not meat be preserved in powdered charcoal?

† The Chinese have a practice of agitating the water they are to drink, for two or three minutes, with a bamboo, in the hollow of which they put a piece of alum, by means of which the earthy particles of the water are precipitated to the bottom.

As, indeed, the most important objection to the use of boiled or distilled water, is its vapidness, owing to the loss of that portion of air with which, in its natural state, it is impregnated; some cheap and easy means of restoring air to water, would be a most valuable discovery. Perhaps a barrel or other churn might answer that purpose effectually. The common mode of impregnating water with fixed air, is troublesome and expensive, and, on that account, never can come into general use. Besides, fixed air is of a very volatile nature, and not in every case desirable to be taken in large quantities; whereas, the more that water can be impregnated with atmospheric air the better. The following plan, therefore, might be adopted: After the water is prepared by boiling, and the infusion of toasted bread, or any other article that is preferred, (if such an addition is thought necessary), let it be put into a common barrel-churn, where it may be at once subjected to any agitation which may be wished for. In the course of its being thus agitated, it will absorb atmospheric air, and the other elastic fluids with which it may come in contact. It will thus become a liquor, safe, palatable and wholesome; to be obtained with little trouble or expence; and accessible, in its utmost perfection, to the poorest individuals. In large towns, it may be prepared in considerable quantities, and sold so cheap as a half-penny a bottle. In private families, it may occasion some trouble, but the expence will be next to nothing, at least the price of the churn would not exceed 2l. or 3l.

7. *On the Superiority of common Water as Liquid Food, and its Use as Medicine.*—We shall conclude our observations on common water, by briefly stating some of the eulogiums which have been bestowed upon it, (which is the more necessary, as water-drinking, like many other

good old customs, is not so fashionable as it was), and by alluding to those medicinal properties which it is said to possess.

Pure water, in the opinion of Hoffman, who was one of the most respectable of medical authors, and whose comprehensive genius, and unwearied industry, left scarcely any branch of medicine untouched, is the fittest drink for persons of all ages and temperaments; and, of all the productions of nature or art, it comes the nearest to that universal remedy, so much searched after by mankind, but never discovered *.

Another respectable physician, in a communication to the author, asserts, that in regard to diet, with a view to the preservation of health, no one rule is of so much importance as to avoid all sorts of compound liquors, water being the only wholesome beverage, the best solvent, and diluent of the solid portions of our food; supporting the tone of the stomach, without exhausting its vigour; and furnishing the most simple, the most bland, and manifestly

---

* "By its fluidity and mildness," says Hoffman, "it promotes a free and equable circulation of the blood and humours through all the vessels of the body, upon which the due performance of every animal function depends; and hence, water-drinkers are not only the most active and nimble, but also the most cheerful and sprightly of all people. In sanguine complexions, water, by diluting the blood, renders the circulation easy and uniform. In the choleric, the coolness of the water restrains the quick motion and intense heat of the humours. It attenuates the glutinous viscidity of the juices of the phlegmatic; and the gross earthiness which prevails in melancholic temperaments. And as to different ages, water is good for children, to make their tenacious milky diet thin, and easy to digest; for youth and middle-aged people, to sweeten and dissolve any scorbutic acrimony or sharpness that may be in the humours, by which means, pains and obstructions are prevented; and for old people, to moisten and mollify their rigid fibres, and to promote a less difficult circulation through their hard and shrivelled vessels."

ly the most suitable supply to the secretory vessels, and general humidity of the body. In a word, good water is the only fit and salutary liquor for the ordinary uses of man; all others are noxious, and that in proportion as they recede in their qualities from water. Wine, and other fermented liquors, doubtless have their uses. They afford a safe, and sometimes a necessary stimulus, in various cases of morbid debility, as well as in the langour of declining life; but, in this view, they belong properly to the head of medicines, and ought to be utterly excluded from that of diet or wholesome aliment. There is no animal, he adds, man excepted, who does not reject these artificial liquors with disgust: and, from an impartial survey of human society in general, it will be found, that those who use water only, as their general beverage, are, *cæteris paribus*, the most free from disease; and retain the vigour of life, and its different functions, to a more advanced age *.

Another eminent physician, Dr George Fordyce, (whose name it is impossible to mention without respect), in a communication to the author upon the same subject, remarked, that if a man wishes to prolong life to a very late period, he must take great care to abstain from wine and

---

* In the Miscellanea Curiosa, you will find a very remarkable observation of an old man, one hundred and twenty years of age, without the loss of a tooth, and of a brisk and lively disposition, whose drink, from his infancy, was pure water.

The famous civilian, Andrew Tieraqueaus who, is said, for thirty years together, to have given yearly a book, and, by one wife, a son to the world, never drank any thing but water from his infancy.—See "The "Best and Easiest Method of preserving uninterrupted Health to extreme old Age," &c. from a manuscript found in the library of an eminent physician lately deceased: 8vo, published in 1748, p. 64. His life is in Bayle's Dictionary.

all other intoxicating liquors; and Faust, in his Catechism of Health, pointedly observes, that if water were the only drink of man, both his health and fortune would be improved. If, what is spent on liquors that are hurtful to life, were appropriated to the purchase of nourishing food, and other necessaries of life, the lot of human kind would be better, we should live longer, and be healthier, stronger, and happier than we are. This observation cannot be too strongly inculcated on all ranks of society, more especially on the middling and the lower orders.

It may be proper here to state, that common water is not only strongly recommended as the best of liquid food, but also as possessing, in a very eminent degree, many valuable properties in the cure of disease, both by external application, and taken inwardly.

This subject was particularly discussed about the year 1724, when two authors, published separate works, celebrating common water as the best means of curing fevers, and many other distempers. In these publications, there are certainly some useful hints, though they carried their doctrines too far, and relied too much upon their favourite remedy *. A voluminous author attempted to refute those publications †. And many of the positions which they contained, were controverted by a physician of some eminence,

(Dr

---

* See "*Febrifugum Magnum*, or Common Water the best Cure for Fevers, and probably for the Plague; with a Discourse on curing the Chincough by Water. By John Hancock, D. D." 7th Edit. 8vo. 1724. Also, "The Curiosities of Common Water, or the Advantages thereof. By John Smith, C. M." 7th Edit. 8vo. 1724. Both these tracts were translated into French, and published in one vol. 8vo. *anno* 1725.

† In a work entitled, a "New Treatise on Liquors," &c. By James Sedgwick, apothecary, one vol. 8vo. Printed *anno* 1725.

(Dr Peter Shaw) *, who maintained, that the juice of the grape was preferable to water; was the grand preserver of health; and the best restorer in most diseases. It is not necessary, in this work, to enter further into this important controversy, though it was judged proper, briefly to state that such a discussion had taken place, and to mention the principal authors by whom it was conducted.

Such are the observations, with which I have thought it necessary to trouble the reader, on the subject of *Water*: we shall now proceed to explain the properties of the other simple fluid, namely, *Milk*; and to give some account of the various articles *of liquid food* derived therefrom.

II. MILK.

THERE is no liquid substance, that deserves to be more particularly considered, as one of the most valuable presents that nature has bestowed upon the human race, than milk. It seems to partake of that just medium between animal and vegetable substances, so desirable in our diet. It possesses enough of the animal nature, to give strong and perfect nourishment to animal bodies, and enough

---

* See a work entitled "The Juice of the Grape; or, Wine preferable to Water. By a Fellow of the College." 8vo. Printed *anno* 1724. It is well known that this work was written by Dr Peter Shaw; and in one of the copies of the tract, in my possession, there is, in manuscript, on the back of the title-page, the following assertion: "Dr Shaw often wished he had never permitted this essay to be printed; and was very angry that a second edition should make its appearance without his leave."

enough of the vegetable, to prevent too strong a tendency to the alkalescent state. It may be described as a kind of emulsion, or white, oily, animal liquor, from which all the parts of animal bodies, particularly in their early years, may receive their nourishment and growth *.

It is impossible, in a work of this nature, to enter much at length into so extensive a subject, on which volumes have been written †. It may be sufficient, for our present purpose, to consider, 1. The nature of milk. 2. The different kinds of milk which are made use of in diet and medicine. 3. The various modes in which it is prepared as liquid food; and, 4. Miscellaneous rules, to be observed regarding the consumption thereof.

1. Milk can easily be separated into three distinct substances; cream, curd, and whey; which are too well known to require any particular description. Besides these substances, chemical art and industry have discovered several others, as sugar of milk, sulphur ‡, &c.

2. A variety of milks have been used in diet and medicine. For children, the milk of women is the food by far the best calculated for their nourishment §. Cows' milk is

---

* See Stephen's Essay upon Diet, prefixed to Dolæus on the Gout, p. 44.

† There is hardly a book on diet, that does not treat largely of Milk; and the celebrated chemist Parmentier, has lately published a considerable and very valuable work upon that subject.

‡ See Thomson's System of Chemistry, Vol. III. p. 605.

§ The following preparation is strongly recommended as a proper substitute for human milk, where, from any circumstance, it cannot be procured for children. In a quart of water, boil two ounces of hartshorn shavings, over a gentle fire, till the whole is reduced to a pint; mix this with is in most general use; and, if physicians and poets are to be credited, was included among the principal articles of diet, in very remote ages *. Among the ancient Scythians, and modern Tartars, mares' milk is in great request, and a very important part of their subsistence. The milk of the ass †, and of the camel, is principally employed for medicinal purposes. In the northern countries, that of the goat is commonly made use of for the same purpose; but in southern climates, it is so abundant as to be destined for food ‡. Sheep furnish milk in small quantities; but where the flocks of this valuable animal are properly attended to, they are never milked but for two or three days after the lambs are weaned. Formerly, the milk of swine was also in request, and considered useful in some disorders §.

---

with twice its quantity of cows' milk, and the addition of a little sugar. This forms, for children, a proper aliment, approaching nearly to the nature of human milk. See "Practical Synopsis on the Materia Alimentaria," p. 13.

* Homer mentions a nation who principally lived upon milk; and in Hart's "Diet of the Diseased," p. 203, there are several instances also, of persons in modern times, who have lived for many years solely on cows' milk.

† In the milk of the ass, the proportion of whey is very great, and of oil and cheesy matter very small: Hence it is light, and well suited to weak stomachs. It is best in spring and summer, but it is neither so light nor salutary when the animal is supported on dry food. If taken early in the morning, from its cooling quality, it is excellent in all disorders where the patient is troubled with an insatiable thirst. Hart's "Diet of the Diseased," p. 204.

‡ Dolæus, in his "Essay upon the Cure of the Gout," mentions, on the authority of Poterius, the story of an old woman of 60, who, by the help of goats' milk, was restored to a state of perfect health, notwithstanding a great decay of flesh and strength, a hectic fever, and a stone. In other cases, it has been found prejudicial. See, in Moffat's "Health's Improvement," p. 212. the story of Lady Penruddock.

§ Hart's "Diet of the Diseased," p. 203.

3 There are various modes in which milk may be consumed. The principal are, 1. In a raw state. 2. When boiled. 3. As sour milk. 4. As cream. 5. As butter milk. 6. As whey. 7. As punch; and, 8. As wine.

1. *Raw milk.*—Milk, in a raw state, ought, if possible, to be taken as it comes from the animal that produces it. There is reason to believe, that one of the principal advantages of children's sucking at the breast, arises from the circumstance of their getting the milk warm from the body of the nurse, and not tainted by the air. The atmosphere speedily makes a great change upon this delicate fluid. The excellence of milk, depends upon the admirable mixture of the three substances of which it principally consists; but, as soon as the air acts upon them, so as to separate the cream from the rest of the milk, it is no longer the same homogeneous and wholesome substance, nor can the articles of which it consists, be ever again perfectly united. Where infants, therefore, are nursed on cow or other milk, it is of the greatest importance not to suffer it to stand for any length of time; and if possible, to give it directly from the animal, or to keep it warm, by the vessel containing it being placed over boiling water. This is always attended to, when asses' milk is given as medicine, and is probably one great cause of the good effects arising from it.

The ancients were accustomed to mix honey, and sometimes a little salt, with their milk, more especially when they wished it to act as a medicine. Sugar prevents milk from curdling *, and it is proper, on that account, to be used by those who have weak stomachs, or who are recovering from sickness. That delicate preparation, called Conserve of Roses, is a useful and palatable addition to milk fresh from the cow, when used medicinally.

---

* Dolæus on the Gout, p. 97.

2. *Boiled milk.*—If milk has stood for some time, there is no mode by which the ingredients thereof can be again brought into any state of union, however imperfect compared to what it previously possessed, except by boiling. Some imagine, that when milk is boiled, and sweetened with sugar, it is more digestible than the raw; being deprived of a considerable quantity of its air, which lessens its tendency to acescency and fermentation; and Hippocrates gave boiled milk, diluted with considerable quantities of water, even in mild fevers *. Milk, in general, is apt to induce costiveness, even in a raw state; (to prevent which, some mix with it brown sugar or magnesia); but when boiled, it is still more apt to have that property, on which account, it is sometimes boiled with oatmeal, veal-broth †, &c.

3. *Soured milk.*—There is a mode of preparing this article, at a place called Corstorphine, in the neighbourhood of Edinburgh, (hence called Corstorphine Cream), which merits some notice. They put the milk, when fresh drawn, into a barrel or wooden vessel, which is submitted to a certain degree of heat, generally by immersion in warm water; this accelerates the stage of fermentation. The serous is separated from the other parts of the milk, the oleaginous and coagulable; the serum is drawn off by a hole in the lower part of the vessel; what remains is put into the

plunge-

---

* Hart's "Diet of the Diseased," p. 206.

† "Practical Synopsis of *Materia Alimentaria*," p. 14.

plunge-churn, and after being agitated for some time, is sent to market as sour milk or cream. Mixed with sugar, it forms an aliment tolerably nourishing; and, from its sourness, it is grateful and cooling.

4. *Cream.*—There is no food more improper for weak stomachs than cream; being liable to turn rancid; very difficult of digestion; and particularly apt to disorder the bowels, when taken too freely. But with strong stomachs, which can digest it, no article is probably more nourishing.

If you propose to drink wine afterwards, it is an unwholesome custom to eat cream, or any preparation of milk, with apple-pies during dinner, or with strawberries, &c. after dinner; for the wine ferments, coagulates the cream, and makes the whole mass hard of digestion. Upon weak stomachs, indeed, such a mixture will produce sickness, vomiting *, &c.

In some countries, as in the western parts of England, the cream is not suffered to rise naturally, but is gathered from it, after it has been thickened upon a moderate fire; and this *scalded* or *clouted cream*, as it is called, is considered to be less offensive to the stomach, and of better nourishment, than the raw †.

The subject of ice-creams will be discussed in the following chapter.

---

* "Concise Observations on the Nature of our Common Food," &c. p. 31. It is known that a whole family has been colicked by drinking ale after rice and milk.

† Moffat's "Health's Improvement," p. 216. The best account of scalded cream is in Marshall's "Rural Economy of the West of England," Vol. I. p. 249. The peculiarity consists in employing culinary heat, to assist in forcing up the cream. It is a process attended with some dif-

5. *Butter-milk.*—After the oily matter in milk is extracted by churning or agitation, there remains a substance, known under the name of butter-milk, which many consider an excellent article of diet, and of great use in colds, consumptions, and other disorders of a similar nature. Its nourishment, however, must depend on the manner in which the butter is made. When that article is manufactured from cream alone, little remains but the vapid refuse of an oily substance, which is bitter and unpleasant; but when the whole milk is employed in the process, (as is the case in Ireland), the cheesy part of the milk, in a great measure, remains with the butter-milk, and makes it more substantial food. Hence the Irish, who live so much upon butter-milk of this description, are so strong and healthy. If we drink butter-milk, while it is new and sweet, it is cooling and refreshing.

6. *Whey**.—When curds are formed for the purpose of being converted into cheese, there remains a liquid which contains the watery and saccharine parts of milk, in a great measure freed from its oily and cheesy matters. This substance is in some degree nutritive, and is distinguished for its diluent and diuretic qualities. It is a great corrector of the blood, and passes off easily by the secretions of the body. There is no drink in general more wholesome, nor more

---

ficulty, as the smallest degree of ebullition mars the process. To those who are accustomed to it, this sort of cream is reckoned a luxury.

* In Shetland, an acid liquor, called *Bland* or *Blethock*, is prepared from milk. Upon the churned milk, or milk deprived of its butter, boiling hot water is poured, and the whole is well stirred. It is then allowed to rest, till all the crudled matter falls to the bottom. The thin liquid (a mixture of the whey and water), is then strained off, and kept as a beverage, and it is a favourite one among the natives of those remote islands.

more palatable, more especially when it is clarified in the manner practised by the French apothecaries, who sell it, as a diluent, under the name of *petit lait* *.

7. *Milk-punch.*—Drinking rum and milk in the morning, more especially if the proportion of the spirit is great, is reckoned a very unwholesome practice; and that preparation of milk, known in Scotland under the name of "*Old Men's Milk* †," would, in general, be still more reprobated by medical men; at the same time, it is reckoned wholesome, (as its name evidently imports), by a hardy race, breathing a pure atmosphere, and addicted to exercise. But there is one mode of preparing milk with spirits, which, though strong, is not unpalatable. The following is the receipt:

---

* There are various modes of preparing the French *petit lait*, but the following are the most common: 1. The most simple mode of making *petit lait* is this: Take two whites of eggs, well beat, add them to four pounds of milk; make it boil, and the curdy part will separate; pour off the clear, and strain it through linen three times, the *petit lait* will then be very limpid and good. 2. To fresh whey, when cold, add the white of an egg for each pound of liquor, and mix them well by beating. Set the liquor on the fire to boil, and, during the ebullition, throw in eighteen or twenty grains of cream of tartar; then pass it through flannel, and afterwards through filtrating paper. 3. It is said, that if the juice of a lemon is put into boiling milk, or boiling whey, drop by drop, it will purify it. 4. If whey is boiled thoroughly, and skimmed, and afterwards filtrated through flannel and paper, it will become clear, but not so much so as when eggs or lemon-juice are used.

† *Old Men's Milk* is prepared in the following manner: The yolk of an egg is beat up in a bowl or bason, and then mixed with some cream or milk, and a little sugar, according to the quantity wanted, and thoroughly incorporated. A glass of spirits, or more, is then gradually poured into the mixture, so as to prevent the milk or cream from curdling. It is found useful to travellers, who are obliged to commence their journey early, particularly if the weather be cold and damp.

Take 8 English quarts of whisky or rum, 4 lib. of sugar, 2 bruised nutmegs, 8 quarts of cold water, the juice of 12 lemons, (the rinds to be taken of and put in the spirits, four hours before); mix the whole, and add 2 quarts of new milk, almost at boiling heat; let it stand two hours, and strain it through a bag till clear.

8. *Milk-Wine.*—By the fermentation of mares' milk, the Tartars prepare a vinous liquor, called *koumiss*, the ardent spirit of which is derived from the sugar of milk, which is very abundant in the serous part of the milk of mares. Late experiments have shewn, that a similar spiritous liquor may be obtained from the milk of other animals. In many cases, it has acted as a strengthener and a restorative, and it has proved highly beneficial at the commencement of a consumption. But, on the whole, it is doubtful, whether, as an alimentary or medicinal article, it be much, if at all, superior to butter-milk, or whey *.

Miscellaneous Rules and Observations.

4. There still remains a variety of miscellaneous rules and observations on the subject of milk, of which the following are among the most important.

---

* "Practical Synopsis of the *Materia Alimentaria*," p. 18. It is a curious fact, that all the nations among whom milk constitutes a chief part of their diet, it is eaten in a state of acidity. The Tartars always ferment the milk of their mares. The Russians prefer their koumiss, which is reckoned a specific for consumptions. The Caffres always ferment their milk by keeping it in sheep-skins, which are never cleaned, in order to preserve the substance that ferments it. They expressed the utmost abhorrence, on seeing Europeans drink some fresh milk; and said it was very unwholesome. Even among the poor people of Scotland, there is more milk eaten in an ascescent than in a fresh state.

It is evident, that the quality of milk must depend, not only upon the species of the animal, and the nature, constitution, and age of the individual of that species, but also upon the season of the year, the mode of feeding, the vessels in which the milk may be put, the houses in which it may be kept, and a variety of other particulars, which it is impossible here to discuss, and which are properly more within the province of the farmer, than of the physician.

Without entering into nice discussions, therefore, regarding the colour of the cow, &c. it may be sufficient to remark, that a young and healthy animal, fed on natural pasture, must give the best milk; and the author has found the milk of a small Highland cow, fed on wild pasture, (which is in perfection in the month of June), to be as much superior, in point of richness, delicacy, and flavour, to the usual produce of the cow in more cultivated districts, as the finest Burgundy is superior to common Port *.

Among the rules to be observed in regard to the consumption of milk, *as food*, it may be stated, that skimmed milk is much inferior to that article in its original state. If milk be too heavy for a weak stomach, it is much more wholesome, to dilute it with water, than to skim it †.

It is a common observation, that milk and fish ought never to be taken at the same meal; at least, that none but strong stomachs can venture upon such a mixture.

Some unfounded prejudices are entertained against milk, as being injurious to the teeth and to the eyes ‡, and the constant use of it, will, it is said, bring on grey hairs prematurely. On the other hand, the use of milk has long been strongly recommended as a remedy for various disorders, in particular, the consumption and the gout.

---

* When a cow is fed on turnips or cabbage, the milk and the butter made from it, has a very disagreeable taste, which is corrected by mixing a little nitre with the fresh milk. It has been suggested, *that mixing nitre with their food*, would be a better mode of producing the same effect.

† "Concise Observations on the Nature of our Common Food," p. 29.

‡ Hart's "Diet of the Diseased," p. 205.

In regard to hectic complaints, there can be no doubt, that, if it be used early, before the disease has taken any hold of the constitution, and if it be properly administered, and other judicious rules for the improvement of health attended to by the patient, it is most likely to prove effectual. But the directions for this mode of curing consumptions, ought to be given by an experienced physician, and rigidly observed.

As to the cure of the gout by a milk-diet, the reader is referred to a short, but judicious treatise, written by Dolæus, which contains directions sufficiently explanatory of the system he recommends*. This respectable physician considers a milk-diet to be a noble remedy for the cure of the gout merely, if it be uncombined with other disorders; and contends, that the patient may use it with almost a certainty of success. He recommends that the milk should either be taken immediately from the cow, or, till taken, should be kept warm, by placing the vessel which contains it over boiling water. He began with smaller quantities, but afterwards went the length of 12 or 14 ounces in the morning, 24 ounces, with wheat-bread, at noon, and about 20 ounces at night, half with bread, and the other half as common drink. Some sugar, or even a little salt, may be put in the milk to prevent it from curdling, and the acid from gathering. By living in this manner, for a space of time, varying from six to eighteen months, according to the degree and duration of the distemper; the whole gouty matter is discharged from the body, and the patient may return with safety to his former mode of living, provided the dictates of moderation and prudence are in any degree observed.

---

* See Dolæus upon the Cure of the Gout, by Milk Diet, translated by William Stephens, M. D. F. R. S. Dolæus also considers milk as the best medicine that has yet been discovered for the stone. See p. 101.

III. OF FLUIDS COMPOUNDED WITH WATER.

The celebrated Pliny, in some part of his works, has remarked it as a great absurdity, that mankind should bestow so much trouble and expence in making, artificially, such a variety of liquors, when nature has prepared to their hands, a drink of so superior a quality as pure water; and the same observation has been made by a variety of other authors. Indeed, some of them have gone so far as to contend, that *raw water*, being the natural drink of all animals, ought not, on any account, to be relinquished; without considering, that *raw vegetables* were also their natural food, and that if the observation be just regarding the one, the use of the other is equally essential.

There is no man who entertains a higher opinion of the excellence and the virtues of water, either when naturally in a state of great purity, or when any defects attending it are removed, than the author of this work; at the same time, he cannot go the length of the doctrine inculcated by Pliny; nor does he conceive, that all preparations of water, are to be condemned as either dangerous or unnecessary.

A person of the most undoubted veracity has stated, that, being of a consumptive habit, he was alarmed, when young, with frequent spitting of blood, which made him abstain from wine and all strong liquors; but, *(incidit in Scyllam, cupiens vitare Charybdim)*, by this he fell into another misfortune, and the stone was the consequence of his drinking raw water *. In fact, though common water may be well adapted for those who take violent exercise, or are employed in laborious occupations; it may not, in every case, be equally salutary for the sedentary and the invalid.

There are many waters, for instance the Seine in France, and the Ness in Scotland, which, if drank by those who are not acquainted with them, have a purgative quality. This, in some cases, has proved fatal; and, at any rate, has obliged many to renounce the use of them. The means of removing that property, was accidentally discovered by a gentleman who visited Paris some years ago. He tried the experiment of boiling the water of the Seine with a little tea, and suffering it to cool before he drank it, he found, by that simple preparation, that any pernicious quality was removed; yet, according to Pliny, water, in its raw and rude state, ought to be preferred.

An author on diet has ingeniously remarked, that though pure water is an excellent assistant to digestion, yet that it is apt to run off too soon, before the food taken is properly digested. If a man, he observes, were to live the life of a savage, water would be a sufficient drink, as, eating only a small quantity, and using great exercise, his digestive organs would be much stronger, and sufficient for digestion, without any other assistance; but, according to the usual mode of living adopted in civilized society, eating daily too much, and taking but little exercise, fluids of a mucilaginous nature, as wines, beer, &c. are necessary; for they continue some time in the stomach, where, if not taken in too great quantities, or not too strong, (in which case they ought to be diluted with water), they promote digestion; and afterwards, remaining for some time in the blood, they gradually carry off the saline and putrescent substances which it contains [*].

---

* See "Code of Longevity," Vol. II. Appendix, p. 191. The author alluded to is Hay, in his "Essay on Deformity," a person of undoubted credit. Since the general use of boiled water, in tea, &c. the frequency of the stone and gravel has greatly abated. The celebrated Rousseau also attributed the severe maladies with which he was afflicted, to the use of raw cold water. A respectable physician, however, doubts whether a urinary calculus ever arose alone from drinking raw water merely.

In various diseases and habits of body, pure water cannot be recommended. The great Sydenham says, that young persons may drink it with safety; but he does not consider it to be a proper *general beverage* in gouty cases. Where a person has the gout mildly, and only at intervals, he prefers small-beer, or wine diluted with water; and, though he expressly forbids all fermented liquors, where the gout is inveterate, yet water alone, he considers as crude and pernicious, and strongly recommends dietetic decoctions as preferable to the pure element [†].

Were preparations with water, and fermented liquors, even unnecessary for health, yet, if such articles are innocent, and gratifying at the same time to the human taste or palate, as adding to the comforts and the pleasures of life, there is no reason why, with moderation, they should not be indulged in.

A statesman, also, is apt to consider the political advantages of liquid food, artificially prepared, and to what multitudes of people it furnishes occupation; how many are employed in raising the barley, in cultivating the vineyards, or in producing the cane, &c. whence so many articles of liquid food are prepared; how many are afterwards employed in the manufacture of those articles; in conveying them to the place of sale; in retailing them for consumption; and to what a multitude of trades and occupations, either directly or indirectly, all this must give birth. It would be impossible, therefore, to recur to plain water, without making almost a total revolution in the state of European society, as it is now constituted. Nor is the existence of such a resource, in a view to taxation, (of which liquids, when not too heavily burdened, are so fair an object), an unimportant consideration. Indeed, when it is considered, that the custom of drinking liquors, artificially prepared, is universal among all civilized nations; and that, where fermented liquors are not in use, opium and other intoxicating drugs are generally taken; it is hardly possible to suppose, that the practice is not adopted on grounds, so intimately blended with the nature of the human frame, that it ought not to be hastily diminished, and far less totally given up.

---

[*] "An Easy Way to prolong Life, by a little Attention to what we eat "and drink," &c. p. 54.

[†] Sydenham's Works, by Swan, p. 492.

The question, however, is not, whether such preparations ought to be indiscriminately taken, but whether, with a view to health, there are not some of them that may be safely recommended, whilst there are others, not equally well calculated for the use of man.

To ascertain that important particular, is the subject of the following observations.

Among the various fluids compounded *with water*, the following are the articles which seem to require more particular attention: 1. Infusions of grain. 2. Gruel. 3. Infusions of bread. 4. Infusions of tea. 5. Infusions of sage and other herbs. 6. Coffee and its substitutes. 7.

Chocolate. 8. Beef tea. 9. Broths. 10. Soups; and, lastly, Some miscellaneous articles.

1. *Infusions of Grain.*—The decoction of pearl, or pot barley, is a common, and useful drink in febrile disorders; and is made palatable, in other cases, by the addition of lemon juice, cream of tartar, wine, raisins, milk, &c. as circumstances may require [*]. This is a very old preparation, recommended even by Hippocrates, and which he preferred to every other aliment, in acute diseases. His *Ptissan*, as that great physician called it, was of two sorts. The first was merely of a decoction of barley and water. The second was the decoction separated from the barley, and boiled again, after it had remained for a sufficient time in a cold state. The lighter, lactescent, and more oleaginous parts of it rose on the surface; which, when separated and collected, he called *the cream of barley.* He describes it as light, of a smooth, moist, and equal consistence; gratefully sweet, allaying thirst; not flatulent, expelling the fæces when too hard and inactive, but neither purgative nor astringent. As we have, by means of pearl barley, which is a modern invention, the power of making this cream of barley in greater perfection than the ancients, the experiment ought certainly to be tried [†].

2. *Gruel.*—The means of dieting the laborious classes of the community, is one of the most important objects to which the attention of any real well-wisher to the public interest can possibly be directed. Their means, it is well

---

[*] See Practical Synopsis of Materia Alimentaria, p. 74.

[†] See Barry's Observations on the Wines of the Ancients, p. 392.

known, are small, and they are too apt to lay out what they can expend, without that economy and judgement which their straightened circumstances require. Of late years, in particular, they have adopted a plan of living much upon tea, instead of purchasing the more wholesome productions of their own country. This evil has long been seriously and generally lamented. With infinite pleasure, therefore, I found, that for one meal at least, that of breakfast, a plan might be adopted, which, in every respect, may be safely recommended to them, and which, indeed, does not seem liable to any rational objection.

In the navy, various measures have been tried for dieting our gallant seamen, but on the whole, the breakfast was found the most difficult meal to manage. At one time, cocoa was tried, but it was given up as too expensive, and it could not always be procured in sufficient quantities. At another time, tea was given them, but the sailors soon found that their strength diminished under so washy a diet. At last, gruel and molasses were fortunately thought of, and they are found completely to answer the object in view.

The gruel, (which is called *burgou* when made thicker), is boiled in large coppers. It is considerably thicker than gruel when given as medicine, but not so thick as Scotch pottage, or hasty pudding. Instead of butter, it is eaten with molasses mixed in the same manner, and, on the whole, it makes a comfortable and wholesome meal. The expence is very moderate, not exceeding one penny halfpenny each man, *per* day. The use of this sort of breakfast is a general regulation in the navy, and cannot be too much praised.

Can there be any objection to the general adoption of this sort of diet among the laborious classes of the community? Here, economy and health are united. Can any one object to the same food, which is generally, if not universally adopted throughout the navy, and which nourishes the gallant defenders of their country? If the name of gruel is not much relished, let it be known under the more sounding appellation of *burgou*. It should, at any rate, be introduced into all poor-houses, work-houses, and establishments of that sort; and those respectable characters, who interest themselves in the comfort of their brethren, it is to be hoped, will recommend the extension of so useful a plan, by every exertion in their power.

3. *Infusions of bread.*—The virtues of water, with toasted bread put in it, have long been celebrated, and the infusion has certainly a beneficial effect in taking away the rawness and crudity of water, giving it a colour which some people may prefer, and even adding to it some nourishment; nor does the addition of toasted bread expel those elastic fluids from the water in the manner that boiling does. In many cases, therefore, it is a beverage to be accounted as safe, if not salutary *. Dr Hancock recommends it in still stronger

---

* The following receipt for making toast and water, with an account of the advantages thereof, was given me by an intelligent friend.

Take a slice of fine and stale loaf bread, cut very thin, (as thin as toast is ever cut), and let it be carefully toasted on both sides, until it be *completely browned all over*, but nowise blackened, or burned in any way. Put this into a common deep stone or china jug, and pour over it, from the tea kettle, as much clean boiling water as you wish to make into drink. Much depends on the water being actually in a boiling state. Cover the jug with a saucer or plate, and let the drink cool until it be quite cold; it is then fit to be used; the fresher made the better, and of course the more agreeable.

The above will be found to be a pleasant, light, and highly diuretic drink. It is peculiarly grateful to the stomach, and excellent for carrying off the effects of any excess in drinking. It is also a most excellent drink at meals, in which case it may be iced in summer time, if more agreeable to the drinker. My informant never goes to bed without having a small jug er terms, in consequence of the following experiment. He cut a large thin slice of bread, toasted it carefully and thoroughly, without burning, put it hot from the fire in a pint of cold water, allowed it to stand a while, and then set it on the fire till it was as hot as tea is usually drank. Pouring boiling water upon the toast in a tea-pot answered the same purpose. He found, that five or six dishes of this water, with or without sugar, was more refreshing, and sooner took off any fatigue or uneasiness, than any strong wine, strong ale, small beer warmed, coffee or tea, (for he tried them all), or any other liquor than he knew of *.

Infusions of other sorts of bread, in particular of toasted oat-cakes, also dried or toasted oat-meal, have been recommended †; but the taste of such infusions, would not be palatable to any one, who was not accustomed to oat-bread.

4. *Infusions with tea.*—There is no subject connected with diet, that has been more frequently discussed, or respecting which a greater variety of opinions have been entertained, than regarding the use of tea, which, by some, is decried as a poison, and which others extol as being possessed of great virtues in medicine, and as constituting a useful addition to our food.

To

---

jug of such toast and water placed near him; and he knows, from several years' experience, that it is a safe and pleasant drink, and so light, that it may be used in very considerable quantities, which common water cannot with pleasure, at least after any excess.

The best liquor, however, after a hard drink, is fresh whey; which is now, indeed, frequently made every morning, in many of the great families in Scotland, where drinking is carried to any excess, as a restorative.

* See Febrifugum Magnum, p. 48.

† See Code of Longevity, Vol. IV. It is said, that an infusion of toasted oat-cake is a remedy for purging, or cholera morbus.

To give even a list of the authors who have written upon this subject, either exclusively, or intermingled with other topics, would require some pages; and several volumes might be filled with the observations which have been thus accumulated. The purpose of this work, however, will be sufficiently answered, by giving a short account of the nature of the plant, and its introduction into Europe; a general view of the arguments which have been made use of in favour of its consumption; the objections which have been urged against it; and the rules which ought to be observed in consuming the same.

1. The tea plant, in its original state, is of a poisonous quality. According to Kæmpfer, it possesses a clammy acrid juice, which is so corrosive, as to excoriate the hands of those who prepare it for use. In order to correct this noxious quality, and the better to enable it to be rolled up or curled, it is either steeped in water, or steamed, by being put in a hot kettle just emptied of boiling water, in which the leaves are kept closely covered up until they become cold. They are then rolled up and dried on plates of iron or copper, from which some of their noxious qualities are said to be derived. Even in this state, they are considered to be so dangerous by the Chinese, that the leaves are commonly not used for a twelvemonth after they are plucked. Nay, after all these preparations, and after time has softened its acrimony, a strong extract of the juice has been attended with the most fatal consequences, and even the effluvia of the herb, long and frequently smelt at, (as tea-brokers have frequently experienced), will occasion palsy, apoplexy, and other nervous disorders.

Tea was originally imported into Europe for medicinal rather than dietetical purposes. It was first used in Britain about the year 1666, and became a fashionable beverage at Court, owing to the example of Katharine, the queen of Charles II. who had been accustomed to it in Portugal. But it would not probably have come into general use had not an idea prevailed among medical men, when tea was first introduced into Europe, that health could not be more effectually promoted, than by increasing the fluidity of the blood; and it came to be considered, that the infusion of Indian tea was the best means of obtaining that effect. It was in the year 1678, that Bontekoe, a Dutch physician, published his celebrated treatise in favour of tea [*], to whose authority, its general use in so many parts of Europe, is much to be attributed.

2. It is hardly possible to suppose, that such an article as tea, should for ages have been made use of by so many millions of people, as those who are addicted to this beverage in various parts of Asia; and that notwithstanding the most violent attacks made upon it, from the most respectable authorities that modern medicine can produce [†], the practice should be perpetually extended in Europe, unless it were found at least an innocent, and in some respects even a useful article.

The virtues which have been ascribed to tea, are as follow: 1. It is said to be a grateful and useful beverage to persons in health, to take with their solid food; (which is the view with which decoctions of it are used in Asia); and, in the opinion of many, it ought, for such purposes, to be preferred to fermented liquors, so general in Europe. 2. There can be no doubt, that it has the property of correcting the pernicious qualities which some waters possess, an instance of which has been already given, (see p. 279).

---

[*] Entitled, "Tractet von het excellente thruyd Thée."

[†] Among these are to be included Cullen, Tissot, Linnæus, Currie, &c.

p. 279). 3. The drinking of tea, has certainly the effect of increasing the digestive action of the stomach, and hence is particularly useful in cases of surfeit and indigestion. 4. There are few who have not experienced, that drinking tea has the effect of exhilarating the spirits; though it must be admitted, at the same time, that this, like every other stimulus, by constant use loses its effect, or may ultimately enervate the system it was meant to strengthen. 5. The use of unmixed tea has been found salutary in medicine. The simple infusion, without sugar or milk, is an excellent diluent and sedative, in ardent fevers; and as it promotes perspiration, and other secretions, it is frequently drank with advantage in colds, coughs, rheumatisms, head-achs, &c. 6. Since the introduction of tea also, complaints of a gravelly nature have greatly diminished, and there is no circumstance to which that important fact can be so justly attributed [*]. 7. The introduction of tea has certainly done more to promote sobriety, especially among the higher ranks, than almost any other circumstance. It would not have been easy to have overturned the old fashion, by which the jolly toper was induced to sit over his bottle, whilst he could hold a glass to his head, had not the temptation of the fragrant cup, prepared by a fair hand, tempted the half unwilling footsteps to the drawing-room. 8. The pleasing occupation which the tea-table furnishes, the beauty of the manufacture in which this preparation *of liquid cookery* is carried on, and circulated; the cheerfulness

---

[*] It is stated, in Barrow's "Travels in China," p. 349., that the Chinese, notwithstanding their want of personal cleanliness, are little troubled with leprous or cutaneous diseases, and they pretend to be totally ignorant of gout, stone, or gravel, which they ascribe to the preventive effects of tea.

ness and lightness of the meal, compared to the solemnity and business-like appearance of a substantial dinner, all tend to make those meals, where the drinking of tea is the principal object, a general favourite, more especially with those who have not voracious appetites, or are not addicted to the bottle. In the last place, it is asked, *Where is the substitute that would answer equally well so many various purposes*, or in favour of which so many arguments can be brought forward *?

Let us next consider the objections which have been urged against the use of tea.

3. It is said, in the first place, That the tea-leaf, when fresh from the tree, is of a poisonous nature; and though it loses some of its acrimony, by its being steeped, and afterwards dried, yet, even in the state in which it is sent to this country, it retains much of its narcotic or stupifying qualities. 2. There is an astringency in tea, which renders it extremely injurious to the constitution; and the immoderate use of such an article, like the frequent bracing of a drum, must ultimately relax and debilitate †. 3. In addition to its natural pernicious qualities, the manner in which it is prepared, by being dried either on iron or on copper plates, must ultimately be extremely injurious. The corrosions of copper are undoubtedly pernicious; those of iron may not perhaps be equally so, yet

---

* An intelligent author, see " Practical Synopsis of the Materia Alimentaria," Vol. I. p. 100., gives the following answer to this question. Let those who have been long accustomed to tea, substitute in its place, milk, milk-porridge, gruel, broth, cocoa, or the like for breakfast; and in the afternoon, milk and water, orgeat or lemonade in the summer, and coffee in the winter. None of those articles, however, would furnish so sociable a meal as tea.

† See " Essay on the Nerves, and on Foreign Teas," by H. Smith, M. D.

the effluvia of any steaming metal, cannot be favourable to health. 4. The manner also in which the teas are conveyed to Europe, closely packed up in slight wooden chests, lined with a composition of lead and tin, and exposed to be affected by the corrosion of those two metals, (which the marine acid of the sea-water frequently brings to action), must render the article here much more unwholesome than even in China. 5. Not only is the tea itself a pernicious article, but it is often mixed, both in Asia and in Europe, with a variety of other substances of a deleterious quality, with a view, it is said, to improve its colour or flavour; and sometimes the whole article is a sophisticated mixture of noxious ingredients. Lastly, It is said, that the very mode in which it is consumed in Europe, is more pernicious than in Asia. According to the Eastern method, a small quantity of leaves are boiled in a kettle, with all the water or milk put into it at once, which is intended to be used at that time. This makes the beverage of an equal strength, and weak at the same time, consequently less injurious: but by our mode of infusing the leaves, with smaller proportions of boiling water, the infusion at first is stronger, and its pernicious qualities are increased.

There can be no doubt, that tea is naturally a pernicious, and if taken in any quantity, a poisonous plant. There is reason also to suppose, that the use of it has contributed to the weak bodies and enervated minds of the Chinese; and that it has also tended to injure the general health, and to weaken the strength of those who are much addicted to it in Europe *. It is the more essential, therefore,

---

* Adair, in his "Essay on Diet and Regimen," p. 33., observes, That, in proportion as its use has become general, many diseases, especially low fevers,

fore, as the use of it can hardly now be totally abandoned, and as in moderation it may be rendered innocent, as well as palatable, and in some respects even useful, to ascertain those rules which ought to be observed in the consumption of this article.

4. The first rule to be adopted is, to avoid the high priced and high flavoured teas, which generally owe their flavour to pernicious ingredients, and to prefer those which have been prepared in a simpler manner. The green teas owe their colour and flavour, either to the leaves being plucked when young, or to some noxious mode of preparation; for they disagree with numbers of people, and even a single cup will occasion sickness and other unpleasant symptoms. In a view to wholesome diet, those sorts of tea, the infusions of which are of a dark, and not of a green colour, and which go under the general name of Bohea, are certainly to be preferred; and if a small quantity of green tea is put in for the sake of flavour, by far the greater proportion ought to consist of bohea, for the sake of health: For it is well known, that the green or high flavoured teas, abound most with those active principles whence the noxious effects of the article arise. 2. It is also of great importance to make the infusion properly; the water should be soft, and not contaminated with saline or mineral particles, it should be in a boiling state when the infusion is made; and, on the whole, it is an excellent general rule, the weaker it is the better *. 3. There is nothing more essential, than to have the

---

fevers, hysterical, hypochondriacal, paralytic, and dropsical diseases, have become more frequent, to which *green teas* have particularly contributed.

* The Eastern mode is to boil, at once, the quantity wanted, and by this means, it is said, that the flavour of the plant, on which its narcotic qualities

the tea mixed with such ingredients as are the most likely to correct its noxious qualities; and of these, sugar and milk are by far the best which have hitherto been discovered; the latter, in particular, ought to be mixed in a greater proportion with tea, than is generally the case [*]. 4. But the most important rule is, that tea should be considered, merely as calculated for the purpose of diluting our solid food, and assisting in its digestion. If it were never taken but either with solid nourishment, or soon after it, there is every reason to suppose, that its pernicious effects would, in a great measure, be prevented.—But when taken, as is too often the case, without solid nourishment, it cannot fail greatly to injure the tone of the stomach, to undermine the health, and to justify the innumerable charges which have been brought against it [†].

Before this subject is dismissed, it may be proper to add the following observations.

It is certainly an important consideration, that the first meal we take to recruit the body, after it has long wanted sustenance, when it has suffered by the loss it must have sustained, in consequence of the insensible perspiration of the

---

qualities principally depend, is dissipated. But we have been so long accustomed to the mode of infusion, that it would be extremely difficult to introduce any other fashion; and by the present mode, the strength of the infusion may be altered, according to the taste, the age, and the constitution, of those who drink it.

[*] Where cream or milk cannot be got, it is an excellent substitute to beat up the whole of a fresh egg in a bason, and then gradually to pour boiling tea over it, to prevent its curdling. It is impossible, from the taste to distinguish the composition from tea and rich cream. This might be of great use at sea, as eggs may be preserved fresh in various ways.

[†] See Smith's "Essay on the Nerves, and on Foreign Teas," p. 60, in which he sums up the various symptomatic effects attending the use of foreign teas taken injudiciously, as a constant aliment.

the preceding night, and when it is necessary to prepare for the labours of the succeeding day, should, in general, depend almost entirely upon tea, with a small portion of bread, perhaps socked in rancid butter, more especially if the hour of dinner is distant, and nothing is taken in the interval. I should imagine, therefore, that the Scotch plan, of eating meat, eggs, and other nourishing substances at breakfast, or what the French call *Le dejeuner à la fourchette*, or fork-breakfast, is a rational system, and ought to be generally adopted, where tea is taken at breakfast *.

Another remark is, that the price of tea ought to be so increased, as to prevent the consumption thereof as much as possible, by persons who cannot afford to take nourishing food with it; nothing can be more injurious, more especially for the laborious part of the community, than to make tea, instead of an auxiliary diet, a principal part of their daily subsistence. The only nourishment derived from the infusion of tea, is owing to the sugar and milk which are added to it, and by which its pernicious effects are in some degree obviated; but the money thus squandered upon tea, would purchase a sufficiency of wholesome and substantial food. The rich and intemperate, as an intelligent author has well observed, may indulge, if they chuse, in the narcotic draught. To their heated and oppressed stomachs, it may not do harm; it may even afford momentary relief. But the poor have no feverish thirst, no feverish heat, to allay after their noon-day repast. To them, it is totally unnecessary as a help to digestion, and as an article of sustenance, it is worthless and improper.

---

* Sportsmen find cold tea very refreshing in the fatigues they are obliged to undergo.

per*. Every means, therefore, that can be thought of by the Legislature, for checking the inordinate consumption of this article, by such additional taxes as will discourage its being so generally made use of by the middling and lower orders, without at the same time promoting smuggling, cannot fail to be serviceable †.

Lastly, in a political view, it is certainly a serious object, that two out of the four meals, which constitute our daily subsistence, should be chiefly composed of an article, brought from such an immense distance, purchased from a nation extremely unwilling to take any thing in return, and for the value of which, it would be impossible for us to pay, if our commerce were not in the highest degree prosperous. I should consider it, therefore, in a peculiar manner, wise and politic, to offer some considerable premium to the person, who would discover some useful and popular substitute for tea; one, in point of health, not only equal, but preferable to that article; of a nature also likely to be generally adopted; and, if it could be procured from some of the productions of our own country, it would be still more desirable ‡.

---

[*] It is estimated, that the expence of tea and sugar, at a very moderate calculation, cannot be stated at less than two-pence half-penny each time, or five-pence a-day, or seven pounds twelve shillings per annum.—Such a sum, properly laid out on nourishing food, would be much more beneficial to a poor man, and to his family.

Dr Currie justly remarks, in his Medical Reports, Vol. I. p. 241. Note. —That the diseases of the poor arise, in general, from their ignorance in the most advantageous mode of cookery, and still more from their indulging in articles, as tea, that consume their means, without adding to their sustenance. The money spent on tea, in particular, is worse than wasting. It is not only devoted to an article that furnishes no nutrition, but to one that debilitates the empty stomach, and incapacitates for labour.

[†] See Practical Synopsis of the Materia Alimentaria, Vol. I. p. 100.

[‡] This subject is very ably treated in Willich's Lectures on Diet and Regimen

5. *Infusions with Sage, &c.*—It is said, that all the benefits resulting from the use of tea, are owing to the warm water merely, which, of itself, has a tendency to relieve the stomach from a load of food, to prevent crudities, and to promote perspiration, and the most essential secretions; and as the vegetable ingredient, it is contended, is of little consequence, nothing can be more absurd than to be sending to such an enormous distance, for the leaf of a shrub to make a warm infusion, when we have so many shrubs of our own growth, which may be accounted, at least, as innocent, if not more salutary.—Amongst these articles, the most celebrated are sage and balm.

The virtues of sage were formerly so much celebrated, that it was said,

> Why do men die whilst sage in gardens grows[*]?

But it is much less thought of at present, though it is frequently used by the Chinese in the form of tea, as a tonic for debilities in the stomach and nervous system. There are twelve sorts, according to Miller, some of which have distinct varieties. The *Tomentosa*, or what gardeners call the *Balsamic Sage*, is preferred to all others for making tea[†]. Sir William Temple recommends it, as not only a wholesome

---

Regimen, p. 415. 416, &c.—He commends various herbs produced in this country. It is astonishing, that in a country so full of speculation and enterprize, and where so much money is made by the sale of quack medicines, no attempt has been made to introduce domestic teas but one, namely, Dr Solander's *Sanative Tea*. Some of our strongly aromatic flowers, as the wood-roof, excel in flavour the teas of China; and the first leaves of whortle berry, properly gathered and dried in the shade, cannot be distinguished from real teas.

[*] "Cur moriatur homo cui salvia crescit in horto."—Regimen Sanitatis Salerni. Code of Health, Vol. III. p. 24.

[†] Miller's Gardeners Dict. Salvia.

wholesome herb for common uses, but as admirable in consumptive coughs, having cured some very desperate ones, by continuing for a month, a draught every morning, of spring water, with a handful of sage boiled in it *. It was formerly considered highly serviceable in palsies, apoplexies, and cold rheumatic defluxions; and it has been remarked, that if it had come like tea, from some remote region, its virtues would have been more prized †.

Balm is another article, an infusion of which has been used for tea. There are ten sorts of this herb, but the one called by botanists, the *Melissa Hortensis*, or Garden Balm, is the sort that ought to be used for medicinal or dietetic purposes. As a medicine, it is reckoned cordial, cephalic, and good for all disorders in the head and nerves, and even as tea, according to Miller, it is greatly esteemed. One or two examples are not sufficient to establish any particular system, but it is asserted, that John Hussey of Sydenham in Kent, who lived to 116, took nothing for his breakfast for fifty years, but balm tea sweetened with honey; and herb teas were the usual breakfast of Fluellyn Price of Glamorgan, who died in the 108th year of his age ‡.

A variety of other infusions are prepared, from juniper berries, anniseed, fennel, coriander, the leaves of betony, rosemary, and other articles, which are made after the same manner as tea, and drank either with or without sugar. It is far from being improbable, that, among the variety of herbs which our gardens produce, a substitute might be found for tea. It certainly would be desirable to ascertain, by decisive experiments, the virtues of the different plants produced in this country, and their uses either for diet or medicine.

---

* Hart's Diet of the Diseased, p. 56.

† Easton on Longevity.

‡ It is said that the flowers of the Linden tree, (the lime, *Oilea Europea*), are used at Paris instead of tea, more especially by ladies subject to the headach, Pinkerton's Recollections of Paris. Vol. I. p. 233.

Before this subject is dismissed, it is proper to observe, that among other sorts of tea, that of ginger has been strongly recommended, more especially in gouty cases; and it is contended, that ginger tea, with a large addition of milk for breakfast, without sugar or butter, would, in various cases, be preferable to Chinese tea as at present taken *. The best Barbadoes white ginger, to be had at any apothecary's, ought to be preferred; it should be rough powdered in a mortar. Begin with a heaped tea-spoonful of the powdered ginger, and take it in boiled milk, either to supper or breakfast. The quantity may be increased to two or even three drachms †. It should not, however, be rashly adopted, without the advice of an intelligent physician.

U 6.

---

* Manual of Health, p. 311.

† These directions are given by a respectable physician, Doctor William Wright, to whom Sir Joseph Banks, in 1784, gave the following account of the effect of ginger tea upon him.

"I have taken two tea-spoons heaped up, of ginger powder, in a pint of milk boiled with bread, and sweetened with sugar, for breakfast, for more than a year past. The weight of the ginger is between two and three drachms. At first, this quantity was difficult to swallow, if the ginger was good. I was guided in my quantity by the effect it had on my stomach; if it made me hiccough, the dose was too large.

"I found occasionally that it produced *ardor urinæ*, but this went off without any ill consequences whatever.

"I have not yet found it necessary to increase the dose, but I use rather a coarser powder than I did at first, which mixes more easily with the milk, and probably produces rather more effect than the fine.

"The late Lord Rivers took ginger in large doses for more than 30 years, and at 80, was an upright and healthy old man.

"I have, since I used the ginger, had one fit of the gout; but it was confined entirely to my extremities, and never assailed either my head, my loins, or my stomach; and lasted only 17 or 18 days; but the last fit I had,

6. *Coffee and its Substitutes.*—Among the various articles of foreign growth, which custom has introduced into general use in Europe *, there is none, tea excepted, that has occasioned more discussion regarding its properties and virtues, than coffee.—This species of bean, or berry, is recommended in a morning for a head-ach, which it will frequently remove. As it has a tendency also to assist digestion, one dish of it, without cream, is found of use to those who have eaten voraciously, and who have strong constitutions. But in delicate habits, it often occasions want of sleep, tremors, and many of those complaints called nervous. It is said to possess one valuable quality, that of counteracting the effects of narcotics †; and hence it is used by the Turks, with much propriety, in abating the influence of the inordinate quantities of opium they are accustomed to swallow.

The infusion, when not too strong, is a wholesome exhilarating and strengthening beverage. It enlivens the spirits, and quickens the memory and fancy, hence is a favourite drink with poets, authors, and statesmen.—When taken to assist digestion, it should not be mixed with any other article but brown sugar or candy, but when taken as an

---

had, before I took the ginger, affected my head, my stomach, and my loins, and lasted, with intervals, from the end of October to January."

An intelligent author asserts, that he has known a disordered stomach, entirely recovered by the use of lemon or orange peel, infused in the same manner as tea. Cleland's Institutes of Health, p. 22.

* It was first known in England about the year 1652.

† Coffee also might be used with great advantage to obviate the painful effects of heat, cold, and fatigue upon the body. I once knew a country physician, says Dr Rush, who made it a practice to drink a pint of strong coffee, previous to his taking a long or cold ride. It was more cordial to him than spirits, in any of the forms in which they are commonly used. Rush's Inquiry into the Effects of Ardent Spirits, p. 25.

an article of diet, more especially by sedentary or delicate people, it should be mixed with a large proportion of milk. When drank very strong, it proves stimulating and heating in a considerable degree, creating thirst, and producing watchfulness. By an abusive indulgence in this drink, the organs of digestion are impaired, the appetite is destroyed, nutrition is impeded, and emaciation, general debility, paralytic affections, and nervous fever, are the consequence. Hence the German physicians are led to complain as much of the bad effects of coffee on their countrymen, as we do of tea.—It is known that coffee, is apt to become strongly acid in stomachs whose digestive powers are weak *.

The best coffee is still imported from Mocho. It is said to owe much of its superior quality to its being kept long; and the value of this article is much improved by attention to the following circumstances: 1. Its growth in a dry situtION. 2. The berries being thoroughly ripe. 3. When gathered, being well dried in the sun; and, 4. Being kept at a distance from all other substances, as spirits and spices, by which its taste or flavour may be injured †.

The roasting of coffee is a nice process, and even the infusing of it afterwards, so as to preserve its aromatic flavour, requires much attention and experience. By a proper degree of torrefaction, it acquires a brownish colour, and by this process, its qualities are evolved when it is ground into powder for use ‡.

We are told that coffee, mixed with cream or milk, forms a common breakfast of nine-tenths of the Parisian females,

in

---

* Adair's Essay on Diet and Regimen, p. 36. Note.

† Nisbet on Diet, p. 347.

‡ See Turnbull, p. 108.

in spite of the inconveniences which result from its habitual use; the consequences of which are prejudicial to their health and beauty [*].

After dinner, and simply prepared with water, coffee is thought to assist digestion, but many find it, on the contrary, heating and prejudicial [†].

Various articles have been made use of as substitutes for coffee. Sometimes the common bean. The torrefaction of rye, mixed with a few almonds, has also been attended with some success. In Germany and Sweden, the root of chicory is not unusual among the middling and lower ranks, and has been much sanctioned by the different governments of those countries, with a view of diminishing the expence of importing a foreign article in such general use. Wheat, peas, and dried carrots, have also been tried; but they have little resemblance to real coffee, except what they acquire from their burnt taste, and empyreumatic oil. A coffee made of acorns, is much recommended in asthmatic and spasmodic complaints; but, as it contains an uncommon quantity of oil, too much circumspection cannot be employed in the use of it [‡].

7. *Chocolate.*—This is reckoned the best of the three exotic liquors which have been introduced into Europe. It is the cocoa nut reduced into paste, with a mixture of flour or sugar, milk or eggs; but it is often mixed with various aromatics, by which it is rendered more heating, and less wholesome. It is best when not boiled too much.—When prepared for

---

[*] See Almanac des Gourmands. Seconde année. p. 208.

[†] Pinkerton's Recollections of Paris, Vol. II. p. 208.

[‡] Willich's Lectures on Diet, p. 420.

use, it should be merely dissolved, as too much heat makes it harder of digestion. It may be properly recommended as a restorative in cases of emaciation and consumption, and it may be of use to old and decayed people [*]; but it is too rich for common aliment, as it becomes oppressive, and at last cloying to many stomachs, on account of its oily quality. To the young and sedentary, any immoderate use of it is at all times improper. Indeed, unless the nut is properly prepared, and the liquor is made fresh and good, it has a greasy or rancid taste, and disagrees with almost any stomach [†]. To the corpulent, and to those employed in mental pursuits, it is highly pernicious. It yields so much nourishment, that it may supply at once the place of victuals and drink. When it was first introduced among the Europeans, whole volumes were written on its manifold virtues; which reputation, however, it has gradually lost, since it became more common [‡].

Cocoa is used as a substitute for chocolate, but improperly; for it is only the husky part of the chocolate nut, mixed with a little of the nut, and some dross and dust. Very weak chocolate is equally digestible, and a more cleanly food [§].

8. *Beef Tea.* This is a very simple article, being made by pouring boiling water over a certain proportion of raw and lean meat, and seasoning it to the palate. It should

afterwards

---

[*] It is observed, that chocolate-makers are troubled with dry asthmas, and disorders in the lungs; but it is not owing to the effluvias of the chocolate, but to the fumes of charcoal used in the making of it.

[†] Mackenzie's History of Health, p. 377.

[‡] Falk's Guardian of Health, p. 151.

[§] Adair's Medical Cautions, p. 222.

afterwards be allowed to become cold, when all the greasy particles will get to the top; and, becoming hard, can be easily taken off. It may then be warmed again, and it will be found most acceptable to those who cannot bear fat or oily broths. A similar sort of tea may be made of mutton and other kinds of flesh. This species of liquid food ought perhaps to be more generally used than it is at present*.

9. *Broths and Soups.* Among the articles of *liquid food*, broths and soups ought not to be omitted. If properly made, they serve both for meat and drink, and it is evident that less drink is necessary, when the solid food is diluted with water. There is a prejudice against the use of broths in England. It is said that they are only calculated for cases where the powers of digestion are weakened; and that the flesh and vegetables used in broths, will not afford so much nourishment, as if they were taken in their solid form, and mixed with saliva, in the act of mastication†. It is also said, that food of this nature gives the stomach too little to do; and that the meat itself, (the substance being extracted out of it), is left in that undigestible state, as to be rendered unfit for repairing the waste of the body, or conveying the proper stimulus, which animal food is intended to produce‡.

---

* Beef tea is also prepared by putting a pound of the lean part of beef, cut into very thin slices, into a quart of water, and boiling it about five minutes, taking off the scum. The liquor is afterwards poured off clear for use. It makes a light and pleasant article of diet for weak and delicate people. On some occasions, spices may be advantageously added to it. Practical Synopsis of the Materia Alimentaria, Vol. I. p. 11.

† Darwin's Zoonomia, Vol. II. p. 668.

‡ Turnbull's Medical Works, Vol. I. p. 46.

These doctrines are justly condemned by other authorities. In regard to eating solid food alone, is it not necessary to drink after it, by which the solids, and the liquor taken, must be converted into a sort of broth, the difference being, that in the one case, the broth is made in a pot, and in the other case, in the stomach*. As a proof of the utility of broths or soups, it may be observed, that the greatest heroes of antiquity lived upon them †; and that many of the healthiest and hardiest rustics in modern times, (those who inhabit the more cultivated parts of Scotland), live principally on such slops.

The writer who has paid the greatest attention to the improvement of cookery, for the benefit of the poor, is Count Rumford. In his economical and philosophical essays, he has strongly recommended the use of broths and soups, and has given a variety of forms for making them cheap, nourishing, and wholesome ‡.

10. *Miscellaneous Articles.* It is impossible, in a treatise of this sort, to go through all the various articles of liquid food, made use of either in this, or in other countries. In the preceding pages, the principal ones have been enumerated.

---

* Domestic Medicine, p. 643.

† See Hufeland's Art of Prolonging Life, Vol. II. p. 252.

‡ The Scotch barley broth being much celebrated, the following receipt is given as an excellent mode of making it:—

Take a tea-cupful of pearl barley, and one gallon of water. Boil gently for half an hour, then add three pounds of lean beef, or neck of mutton, some carrots and turnips cut small, a pint of green pease, if in season, and some onions. Let the whole boil gently for two hours longer in a close soup-kettle, when the broth will be fit for use. This is a wholesome national dish, giving the stomach no trouble, as the chyle produced by it is of a mild balsamic nature, and incapable of furring up the glandular system.—See Culina Famulatrix Medicinæ, p. 20.

merated. Among the miscellaneous articles, *capillaire* may be mentioned. It is a rich syrup mixed with lemons, and diluted either with spring water or milk, and is a pleasant drink, more especially during the hot seasons of the year. *Lemonade* answers nearly the same purpose. *Orgeat*, which is made of pounded blanched almonds, a few bitter ones, with clear spring water, and a table spoonful of orange flower water, properly diluted, is not only a pleasant beverage, but used in France medicinally as a febrifuge.

Sugar and water, we are told, is, at present, a very common drink at Paris, and reckoned extremely wholesome, as it almost instantly alleviates any slight indigestion, or uneasiness of the stomach, obviates the effects of an extraordinary glass of wine; and, if taken at the beginning, cures a common cold. A glass of sugar and water, is often taken at Paris before going to bed *.

III. OF FERMENTED LIQUORS.

It is almost incredible, the great thought and pains which mankind have taken, in all ages, and in all countries, to find out some liquor, more agreeable than water, more likely to strengthen the body, to cheer the spirits, and to relieve the mind. Even the wildest savages have endeavoured, to find out some strong intoxicating liquor calculated for those purposes. Virgil describes a nation in the north, who regaled themselves with a liquor made from the fruit of the service-tree, and he paints them as a people gay and ſrolickſome by means of that unpleasant drink *.

---

* Pinkerton's Recollections of Paris, Vol. I. p. 300.

In hot countries, it is true, that such liquors are not either so necessary nor so wholesome. The perspiration there is so excessive, that the blood stands in constant need of a supply of its aqueous part. This can only be done by watery liquors, as fermented ones could not be taken in sufficient quantity, without increasing the inflammatory disposition by the stimulus, which it seems the intent of nature to counteract. But in cold countries, the body has little spontaneous tendency either to inflammation or putrefaction; on this account, animal food and fermented liquors are more proper to be used; and, indeed, where animal food is used in a large proportion, fermented liquors become in a great measure necessary, to obviate, in some degree, the septic tendency of such a way of living †.

The various sorts of fermented liquors may be considered under the following general heads, namely, 1. Wine produced from the grape. 2. Wines made from other articles. 3. Cyder. 4. Perry. 5. Malt liquors. 6. Spruce beer; and, 7. Honey liquors. Each of these, and any articles connected with them, will require a separate discussion.

1. *Wine.*—It cannot be expected, that, in a work of a limited nature, so extensive a subject as that of wine, on which so many volumes have been written, should be discussed at any great length; but it may be proper, briefly to

---

* Goquet's Origin of Laws, Vol. I. p. 109. The service-tree bears a kind of berry. See Bailey's Dict.

† Falconer's Observations on Cadogan's Dissertation on the Gout, p. 48.

consider,—1. The general nature of that species of liquor. —2. The different sorts of it commonly made use of.—3. The quantity that may be safely used.—4. The advantages that are ascribed to the use thereof.—5. The objections which have been made thereto.—6. The means of preventing or detecting adulteration; and,—7. It is proposed to add any miscellaneous particulars connected with so important a subject, and which could not well be comprehended under any of the preceding heads.

1. Wine is properly the fermented juice of the grape, and it contains, according to the latest chemical experiments, the following component parts:—1. *Alcohol*, or spirit, to which it is indebted for its strength, and which may be separated from the other substances by distillation. —2. *Extractive matter*, or the sweet principle, a substance which has not yet been examined with much precision.—3. *Volatile oil*, by which the peculiar flavour and odour of the wine are distinguished.—4. *The colouring matter*, which is contained in the husk of the grape; and,—5. *Water*, which constitutes a very great proportion of all wines *.

Wine, in more popular language, is described, as a most pure, subtile, concocted juice, nearly resembling the animal fluids; as a light, clear, and beautiful liquid, of a fragrant scent, and delicious flavour, easy of digestion, and the most homogeneous to the human body of all vegetable productions, being wholly convertible into it, without leaving any fæces behind, or of itself affording any excrement †.

When properly prepared, it possesses many peculiar qualities,

---

* See Thomson's System of Chemistry, Vol. IV. p. 461.

† "The Juice of the Grape; or, Wine preferable to Water."—By Doctor Shaw, p. 5.

lities, very different from any other natural or artificial production. Taken in a just proportion, it surprisingly strengthens and excites the spirits; and, in greater quantities, gives a quick succession of agreeable ideas, banishes grief and fear, and exalts the latent virtues or vices of the mind *.

2. Wines have been variously classed, according to the countries where they are produced, or the properties of which they are possessed; but for a general view of the subject, it may be sufficient to divide them into four sorts; —*the acid*,—*the sweet*,—*the mild*,—and *the austere*.

The acid wines, as the Rhenish and Hock, are the least heating and the most diuretic, and the best calculated for consumption in hot weather. They pass freely by the kidneys, and gently loosen the belly. But all thin or weak wines, though of an agreeable flavour, yet as containing little alcohol, are readily disposed to become acid in the stomach, and aggravate all arthritic and calculous complaints.

The sweet wines form a numerous class, including many sorts produced in Hungary, Spain, France, Italy, and Greece, &c.

When these are properly fermented, and have not been adulterated by the addition of sugar, honey, &c. they afford, if taken in moderate quantities, a true medicine to the weak and convalescent; but in great quantities, they are heating and injurious †.

---

* Barry on the Wines of the Ancients, p. 12.

† The celebrated Sydenham preferred Canary to any other wine. He took little more than a quarter of a pint of it immediately after dinner, every day, to promote digestion, and to drive the gout from his bowels. Swan's Sydenham, p. 590.

The mild wines, such as Claret, Burgundy, Sherry, Madeira, including also the best wines produced in Champaign, &c. are more cordial than the acid wines, and can be taken with safety in greater quantities than the sweet. They are, on the whole, the best calculated for a general beverage; and whatever effects they may ultimately produce, if the dose is not too frequently repeated, they furnish the means of enjoying the luxury of drinking, without, at least, any immediate injury to the health.

The austere and astringent wines, such as port, when not mixed with too large a proportion of brandy, are generous and stomachic, and well suited to the generality of British constitutions. They are peculiarly well calculated for cold and moist weather, but, like other red wines, they are apt to occasion costiveness, which renders a change to white wine frequently advisable. They are often useful, however, in restraining immoderate evacuations, in diarrhœas, and complaints of a similar nature.

3. The quantity of wine to be taken, must depend on various circumstances, as, upon the natural strength of the liquor, whether it is taken pure, or diluted with water; whether it is the sole kind of liquor taken at the time, or whether the object in view be to take it as a medicine *, or

---

* Though in common cases, a small quantity of wine, as a tonic, may be sufficient, yet, in some disorders, particularly the typhus fever, it is given in much greater abundance. Trotter, in his Medicina Nautica, Vol. I. p. 287 and 290, after observing, that wine is the most grateful of all stimulants in low fevers, adds, that he has given it to the extent of four pints in twenty-four hours, and that, under particular circumstances, even a greater quantity of wine may be proper.

In the putrid sore throat, also in the small-pox, when attended with great debility, and symptoms of putridity, in gangrenes, and in the plague, wine is to be considered as a principal remedy; and in almost all cases of langour, and of great prostration of strength, wine is experienced to be a more grateful and efficacious cordial than can be furnished from the whole class of aromatics.

or to drink it as a diluent for solid food; or to indulge in a social and exhilarating glass.

As a tonic and stomachic medicine *, three glasses of good wine after dinner may be sufficient. As a diluent for solid food, probably double that quantity with water, or some other liquor, may be safely allowed †.—In regard to a cheerful glass, to give a zest and relish to social intercourse, a bottle of generous wine may be occasionally permitted, to persons in perfect health, provided they have sufficient strength of mind, never to exceed that quantity, and do not frequently proceed, to that *utmost limit* of rational indulgence.

4. There is no subject in which authors have differed more,

The use of wine, as a cordial in fever, is of very ancient date. Pliny the elder says: Cardiacorum morbo, unicam spem vino esse certum est. Aretæus, and Cœlius Aurelanius, give similar evidence. See Trotter's Essay on Drunkenness, p. 30. Plutarch reports, that when the plague raged in the army of Julius Cæsar in Africa, no remedy was found so effectual as good and generous wine. Asclepiades wrote upon the use of wine, which he introduced into almost every remedy, observing that the gods had not bestowed a more valuable gift on man. Pliny, L. 23. No. 1.

* In regard to wine as a medicine among the ancients, that subject is very fully treated of in Barry's Observations on the Wines of the Ancients, Chap. XIII. p. 355.—He informs us, that Hippocrates always considered his vinous mixtures, as a principal instrument in his medical regimen, and claims the singular merit of being the first who applied them to medical uses. He directed three different mixtures of the strong wines, and even diluted the weak wines with water *. In fevers, he mentions a composition of one part of old Thasean wine, to twenty-five parts of of water.—Ditt. p. 368. Hipp. De Morb. Lib. 3.

* Barry on the Wines of the Ancients, p. 363.

† Dr Cheyne, in his Essay on Health, p. 75. says, that the best strong liquor for weak and studious people is wine; the best quantity a pint in twenty-four hours; and the best way of drinking it is, three glasses with, and three glasses without water. Dr Cadogan, in gouty cases, when his patient has recovered health and strength, and can take exercise, admits of

more, than regarding the advantages and disadvantages of wine. We shall begin with stating the arguments urged in support of this favourite beverage.

Were we to drink, it is said, pure water alone, it would find its way out of the body, without carrying the saline or putrescent particles of the blood with it; but when we use mucilaginous fluids, as wine, beer, &c. they remain sometime in the blood, mix with those saline and putrescent substances, and gradually carry them off. Hence these artificial liquids, if moderately taken, so as not to injure digestion, are the best liquors we can use. Indeed, were it admitted that water is the best drink under *a vegetable diet*, which the experience of the Gentoos and other nations seems to justify, yet without much exercise, as in the hunter state, fermented liquors are necessary, *with animal food*, on account of its putrescent tendency *.

It is further contended, that the moderate use of wine is conducive to health; that with most ages and constitutions, it has the effect of a most generous cordial; that those who indulge in the use of it, are less subject to fevers of the malignant and intermittent kind; that all the functions, both of body and mind, are roused and facilitated by it; that it has a powerful effect upon the organs of digestion, upon the circulation of the blood, and upon the nervous system, promoting digestion, strengthening the action of the heart and arteries, and raising the spirits †.

It

---

of a pint of wine only once or twice a-week, for the sake of good humour and good company merely, and not as good for health. Diss. on the Gout, p. 91.

* This is an old observation. In the words of the Salernian school:
Potus aquæ sumptus comedenti incommoda præstat;
Hinc friget stomachus, crudus et inde cibus.

* Practical Synopsis of the Materia Alimentaria, Vol. I. p. 104; written

It is also said, that not only physicians, but that many philosophers, have recommended the use of wine as a preservative against chagrin, and as a salutary remedy in disease. Seneca informs us, that Solon and Cato sometimes cheered themselves with wine; a glass of which they considered as tending to produce strength, and as a remedy against many disorders, as well as an antidote to grief. Plato, though severe against the use of wine for the young, yet permitted men of forty years of age, to drink it with moderation, and even invites them to take a cheerful glass.

The first effects of wine, we are told, are an inexpressible tranquility of mind, and liveliness of countenance; the powers of imagination become more vivid, and the flow of spirits more spontaneous and easy, giving birth to wit and humour without hesitation. *Dissipat evrius curas edaces.* All anxieties of business, that require thought and attention, are laid aside; and every painful affection of the soul is relieved or alleviated.

Invigorated with wine, the infirm man becomes strong, and the timid courageous. The desponding lover forsakes his solitude, and silent shades, and in a cup of *Falernian*, forgets the frowns and indifference of an unkind mistress. Even the trembling hypochondriac, unmindful of his fears and ominous dreams, sports and capers like a person in health. Regaled with the pleasures of the board, the soldier no longer complains of the hardships of a campaign, or the mariner of the dangers of the storm *.

It

---

ten by an author who has shown great judgment in the materials he has collected. See also Valangin on Diet, p. 134.

* Trotter's Essays on Drunkenness, p. 17.

It is singular, that Haller *, and Hoffman †, two eminent physicians, and both of them men of sober habits, and eminent for their piety and learning, should consider wine as favourable to the poetic fire; and that the latter, in particular, should call it the Pegasus of poetry. He also remarks, that those nations who use wine, are more ingenious than other men; and that the liberal arts, or learned studies, do nowhere flourish more than in those places where wine is used.

It would be endless, however, to quote those general remarks, which are scattered among a variety of works, on so popular a subject. It may be sufficient to extract the following lines from a celebrated poet, which seem, on the whole, to contain an opinion entitled to general concurrence and approbation.

> Nothing like simple element dilutes
> The food, or gives the chyle so soon to flow.
> But where the stomach, indolent and cold,
> Toys with its duty—*animate with wine*
> *Th' insipid stream* ‡.

Even those, however, who approve of the use of wine, do it not only with restrictions in regard to quantity, but also with the strongest injunctions to prevent its being used in youth, and still more in infancy. By giving wine to children every day, we debauch their natural taste in their earliest years, and teach them to relish, what will injure their constitutions when young, but which, if properly abstained from, would prove one of the most valuable

---

* De Temperamento.

† Physiol. Lib. XVII. Sect. 1—13.

‡ Armstrong's Art of Preserving Health, Book II. line 420.—The poet adds in behalf of malt liquor:

> Tho' golden Ceres yields
> A more voluptuous, a more sprightly draught;
> Perhaps more active.

able cordial medicines we possess *. It is an old adage,—"*Lac senum est vinum.*"—But though wine may be called the milk of old age, it is a poison to youth †.

5. The objections which have been urged to the use of wine, are next to be stated.

Wine, it is said, produces more diseases than all the other causes of illness put together ‡.

Many admit that wine, taken to an excess, is hurtful, but contend, that a little wine is wholesome, and good for every one, and accordingly, they take it every day, and even give it to their children. Whereas, wine ought to be reserved as a cordial in sickness and old age, and a most salutary remedy it is, did we not exhaust its power by daily use §.

---

[*] Garnet's Lectures on Zoonomia, p. 287. An ingenious surgeon tried the following experiment. He gave to two of his children, for a week alternately, after dinner, to the one a full glass of sherry, and to the other a large China orange: the effects that followed, were a striking and demonstrative proof, of the pernicious effects of vinous liquors, on the constitution of children, in full health. In the one, the pulse was quickened, the heat increased, the urine became high coloured, *and the stools destitute of the usual quantity of bile*, whilst the other had every appearance that indicated high health; the same effects followed, when the experiment was reversed. See Beddoes's Hygëia, Vol. II. p. 35.

[†] It may be asked, at what age ought a child to begin the use of wine? To this I must reply, that spirits, wine, and fermented liquors of all kinds, ought to be excluded from the diet of infancy, childhood, and youth; and that the use of these liquors is hurtful, in proportion to the tender age in which it is begun. Natural appetite requires no such stimulants. Human blood, and healthful chyle, do not acknowledge *alcohol* to be an ingredient in their composition.—See Trotter's Essay on Drunkenness, p. 149, also 112.

[‡] Le vin, que l'on peut nommer le sang de la terre, est l'ennemie capital de ses enfans.—Tableau de l'Amour, p. 237.

Garnet's Lectures on Zoonomia, p. 287.

[§] Trotter's Essay on Drunkenness, p. 164. Proper food, in proper quantity, is exciting enough for the strong; and without caution, is apt to be over-exciting to the weak. Extraordinary stimulants should, there-

When wine is taken in excess, premature old age is the certain consequence. The wrinkled and dejected visage,—the bloated and sallow countenance,—the dim eye,—the quivering lip,—the faultering tongue,—*sans teeth*,—the trembling hand,—the tottering gait,—are so many external signs of bodily infirmity; while weak judgment, timidity, irresolution, low spirits, trifling disposition, and puerile amusements, discover a mind poisoned by the bowl of excess, not broken by the hand of time *!

We are also told, that the exertion of strength, produced by stimulating and fermented liquors, is destructive to the health; and that the natural and salutary means of strengthening the constitution, are, *rest*, *sleep*, and *proper food*, and not fermented liquors. However useful and profitable it may be, to use fermented liquors medicinally, under particular circumstances, it should ever be recollected, that they *do not furnish an increase of the powers of life*, or ability to produce labour permanently; they only stimulate and excite the action of the powers of the body, without supplying the expenditure of the principle producing those powers; they in short may produce, for a short time, more action than otherwise could be excited, but are succeeded by debility or disease, and a worn-out constitution.

6. In the use of wine, not only the quantity, but, perhaps more than in any other thing, the quality, ought to be attended

---

fore, be reserved for the seasons when the powers of the system begin to flag. Beddoes's Hygëia, Vol. II. p. 38.

* See Trotter's Essay on Drunkenness. Every apartment, it is said, devoted to the circulation of the glass, may be regarded as a temple, set apart for the performance of human sacrifices. And they ought to be fitted up, like the ancient temples of Egypt, in a manner to shew the real atrocity of the superstition that is carried on within their walls. Beddoes's Hygëia, Vol. II. Essay VIII. p. 118.

tended to. Thousands of lives have been sacrificed, to gratify the avarice of the treacherous dealers in this important article. One bottle of adulterated wine can produce effects, which, though the cause is unperceived, will poison with disease the course of a whole life. Professor Hahnemann has invented an excellent test, under the name of *liquor vini probatorius*, prepared thus:—One drachm of the dry liver of sulphur, and two of the cream of tartar, are shaken in two ounces of distilled water, till it be quite saturated with the hepatic air. The liquor is filtered through blotting-paper, and kept in a close stopped phial; sixteen or twenty drops of which may be dropped into a small glass of the suspected wine.

If it turn black, or even muddy, if its colour approach to that of a dark red, if it has first a sweet, and then an astringent taste, it is certainly impregnated with some preparation of lead. But, if the dark colour be of a blue tinge, like pale ink, we suspect the wine to contain iron. Again, a sediment of blackish-gray colour denotes copper or verdigrease. But, if the wine shows only turbid, with a white sediment, it is certainly devoid of any metallic impregnation.

Over sulphurated white wines produce very heating and dangerous effects, and are easily detected, by putting in a piece of silver, which immediately turns black *.

7. The following miscellaneous observations, could not be included under any of the preceding heads.

New wines are much objected to, being liable to a strong degree

---

* See Dr Molleson's Observations, Code of Longevity, Vol. II. p. 42.—On this interesting part of the inquiry, see Quincy's Lexicon-Medicum, by Hooper, voce *Wine*; also, Willich's Lectures on Diet and Regimen, p. 401.

degree of acescency when taken into the stomach [*], and thereby occasioning much flatulency, and eructations of acid matter; heartburn and violent pains in the stomach, from spasms, are also often produced; and the acid matter, by passing into the intestines, and mixing with the bile, is apt to occasion colics, or excite diarrhœas.

Old wines, on the other hand, though preferred by connoisseurs, and though they may be deemed more palatable, yet they are certainly not more wholesome, if kept beyond the time of the fermentation being completely finished [†].

The gentle stipticity in claret, renders it, on the whole, the most wholesome of any strong liquor whatsoever, to be drank plentifully; and the great quantity of tartar contained in it, certainly prevents its relaxing the stomach, or rarifying the blood, so much as other spirituous liquors. But the white wines agree better with some bilious constitutions, and those subject to be costive [‡].

The low and small wines ought to be cautiously avoided, ed, as they are too frequently impregnated with poisonous qualities, extracted from lead, which vintners often use, in order to prevent such wines from turning sour; and thence more mischief has arisen, than is generally observed, or taken notice of. It is owing to these weak, but cheap wines, thus adulterated, that the lower class of people, in the wine countries, have that ghastly and half-starved appearance, which characterize them from their richer neighbours, and those of their own rank in the northern nations *.

---

[*] Indeed wine, when converted into vinegar in the stomach, assists in turning soon the vegetable portion of the meal upon which it is poured. Beddoes's Hygëia, Vol. II. p. 51.

[†] Adair's Medical Cautions, p. 248.—In Walker's Hints to the Consumers of Wine, 8vo. printed at Edinburgh 1802, it is justly remarked, p. 43, that there is a possibility of keeping wine too long. This is an error natural to the connoisseurs. Among such, *tawny port* was once a fashionable treat; but nature and experience join in teaching us, that wine, like every other thing else, attains to a certain summit of perfection, beyond which its state is decline; and it may be depended on, that when the colour begins to fade, the true body and best qualities are failing also.

[‡] Forster's Treatise of the Causes of most Diseases incident to Human Bodies, and the Cure of them, p. 236.——Barry observes, in his Treatise on the Wines of the Ancients, p. 438, that claret is now so much mixed with Spanish wines, that it has altogether lost those grateful and salutary qualities for which it was so long esteemed.

The following judicious rules are given by Galen, regarding wine for those in advanced life:

That wine is best for old people, which is strong and diuretic; it should be strong, in order to diffuse a proper heat over their cold limbs, and diuretic, to carry off any superfluous serosities, which, by remaining in the body, might become injurious to their health. They should, therefore, chuse their wine of a light thin body, because such is commonly diuretic, and of a pale or yellow colour, because such is the strongest; and should abstain from thick, black, or astringent wines, because they are apt to cause obstructions in the bowels. Nor, indeed, is sweet wine good for old men, unless they are very lean, and upon that account require rich wines to nourish them; but then they should be of the generous, pale, or yellow kind *.

Wine, says Plutarch, is the most beneficial of all drinks, the pleasantest physic in the world, and yields the most delicious *haut-gout*, if it be drank in a time when it is more seasonable than water. Water, not only mingled with

---

* Falk's Guardian of Health, p. 146.

† Code of Longevity, Vol. II. p. 144.—It is particularly necessary for old people to be attentive to the wine they drink. Cornaro found his strength declining, when the wine he commonly made use of, began to be depraved, and to want its usual spirit.

wine, but if it be drunk by itself, between wine and water mixed together, it makes the mingled wine the less hurtful. We should accustom ourselves, therefore, in our diet, to drink two or three glasses of water, which will allay the strength of the wine, and make drinking of water familiar to our body, that so, in case of necessity, it may not be looked on as a stranger, and we be offended at it [*].

It was formerly observed by Hippocrates, that wine, diluted with water, is more friendly to the head, breast, and urinary passages; but wine alone, or mixed with very little water, agrees best with the stomach and bowels [†].

It will hardly be credited, in modern times, but it is a fact, which cannot be disputed, that the ancients mixed salt water in their wines. Hippocrates mentions that practice as not unusual in his time; and Cato recommends that the sea water should be taken up at a great distance from the land, and kept in a cask for some time, until it was more depurated. This saline mixture certainly contributed to attenuate the viscidity of these strong wines; to prevent their disposition to a putrid state; and to depurate them more freely from lees [‡]. Dioscorides says, that wines are prepared with sea water in different ways; for some, immediately after gleaning the grapes, mix sea water with them; others expose them to the sun, and thus tread them, adding sea water; others, again, make the grapes into raisins, and macerate them in vessels with sea water, and thus tread and press them. Wine made in this way is sweet; but there are others prepared of a more austere taste [§].

---

[*] Code of Longevity, Vol. II. p. 124.

[†] Code of Longevity, Vol. II. p. 56.

[‡] Barry on the Wines of the Ancients, p. 55 and 59.

[§] Dioscorides, Lib. V. c. 801.

Pliny tells us, that the properties of this wine, were first accidentally discovered, by a servant stealing some wine, and filling up the vessel with sea water, which turned out of superior quality *. And in another part, he informs us, that the sea water mingled therewith, was sometimes superstitiously fetched from the deepest ocean †.

The ancients had a mode of making their wines thicker, or more *inspissated* than the moderns ‡. These ought properly to be called *extracts*, rather than liquids, for they could not be taken, without being considerably diluted by water, to give them a proper degree of fluidity, as common drink. The Maronian wine was so much distinguished for its superior strength, that, according to Homer, it required twenty parts of water to dilute it properly.

> Such were the wines, to quench whose fervent steam,
> Scarce twenty measures from the living stream,
> To cool one cup sufficed.—*Pope's Odyssey*, *Book IX.*

Hippocrates assigns the same proportion of water to the Thasian wine §. The rate however varied. It was sometimes only double the quantity of water to that of wine, sometimes three parts of water, and two of wine; but those who were devoted to Bacchus, preferred five parts of pure wine, and two of water, though it soon made them furious like the Bacchanals. Some of the wines of the ancients were so weak, by nature, as to be called υδαρεις, *aqueous*, or

---

* Nat. Hist. Lib. XIV. c. 8.

† Lib. XIX. c. 20.

‡ The thickest wines, in modern times, are those of Hungary. They are made of the juice which exudes, without pressure, from very ripe grapes.

§ Lib. II. De Morbis, in fine.

watery wine; to them no addition of water was necessary*.

The ancients had a custom also, of cooling their wine with snow. Xenophon says it was necessary to procure snow, to cool their wines in summer, which otherwise could not be drank with any pleasure. The mixture of hot water of the purest kind, with wine, and in a just proportion to its strength, and afterwards cooling both in snow, was a most elegant and salutary preparation, for it is well known, that boiling water, immersed in snow, will sooner acquire *an exquisite degree of coldness*, than when immersed in its common cold state †.

On the whole, it may be observed, that complete abstinence from wine, ought not to be established as a general rule. To many constitutions, it proves evidently hurtful; but, to others, it is the most beneficial means of restoring health and strength that has hitherto been discovered. Experience is here, as in other cases, the surest guide ‡.

In regard to the various sorts of liquids connected with wine, they may be considered under the following heads, namely, wine and water, negus, and what is known under the name of cup. Vinegar and water also may be treated of under this general head, as the best vinegar is produced from wine.

---

* Barry on the Wines of the Ancients, p. 362.

† Barry on the Wines of the Ancients, p. 169.—It is a curious fact, that the ancients were at first accustomed to put snow and ice *into* their wines, but they were thus vitiated by all the impurities therein contained. Nero invented, however, a mode of immersing the vessel, which contained the wine mixed with boiled water, into snow, by which means it quickly received a peculiar pure, equal, and intense degree of coldness. Pliny says, that Nero valued himself more on this improvement in luxury than Augustus did for all the encouragement he had given to the fine arts. Barry on Wines, p. 137. Lib. 51.

‡ Code of Longevity, Vol. II. App. p. 11.

*Wine and Water**. Even those who recommend water as the best of liquids, must admit, that in many situations it cannot be had of a good quality, and that little attention is paid to its improvement. To correct the defects of water, the celebrated Sydenham, who found water alone crude and pernicious, recommended wine, well diluted with water, as a safe drink, particularly to those afflicted with gouty complaints †. It is more necessary for wine drinkers, to adopt this plan in England, than even on the continent; because in wine countries, they have a variety of weak wines, which may answer as a general beverage; whereas the wines we import, are of a strong quality, and consequently ought not to be taken for common drink, without being diluted with water. It is proper to remark, however, that the same quantity of wine, when diluted, intoxicates sooner than the same quantity, drank in the same time, without that dilution. This is a common observation of drinkers; and it is accounted for in this way; that the wine, by dilution, is applied to a larger surface in the stomach, and hence causes a quicker diffusion over the system; but though wine thus diluted, sooner intoxicates, yet the effects are sooner over ‡.

---

* Mixing wine and water was a favourite practice among the ancients. Hence Bacchus was called *Rectus*, because he first introduced it; having taught a certain king of Athens to dilute his wine with water; men who, through drinking, staggered before, by mixing water with their wine began to go straight. It is also said, in ancient mythology, that the jolly god was educated by the naides, or the nymphs of the rivers and fountains; implying, that men ought thence to learn to dilute their wine with water.

† Swan's Sydenham, p. 472.

‡ On the same principle, wines which provoke urine soonest, more quickly occasion intoxication.

Negus. This is a well known beverage, consisting of diluted wine, with the addition of the juice of lemons or Seville oranges. The addition of the fruit makes it diuretic and stomachic. It is reckoned much more wholesome, if, with red port wine, oranges are used instead of lemons.

The celebrated eastern beverage, called *Sherbet*, is a species of negus, with the exception of the wine. It consists of water, lemon, or orange juice, and sugar; in which are dissolved perfumed cakes, made of the best Damascus fruit, and containing also an infusion of some drops of rose water. Another kind of it is made of violets, honey, juice of raisins, &c. It is well calculated for assuaging thirst, as the acidity is agreeably blended with sweetness. It resembles, indeed, those fruits, which we find so grateful when one is thirsty.

Cup. The following is said to be a good receipt for making this species of drink: Take one bottle of sherry, (but Madeira is preferable), two bottles of cyder, one of perry, and one gill of brandy; and after these ingredients are mixed, take two lemons, pare the rind as thin as possible, then slice the lemons, and put the rind and lemons into the cup; to these add a little grated nutmeg, and powdered sugar, to make it palatable, stir them together; then toast a biscuit very brown, and throw it hot into the liquor. It is generally found a pleasant draught at dinner, and produces no bad effects on those who drink it in moderation, though that very circumstance is very apt to seduce the thoughtless to drink it to excess.

Vinegar and Water. It is well known that the soldiers of Rome and Carthage used vinegar and water as their common drink. As in their long marches, they must often have found the water of an unpleasant quality, andeven pernicious; and, as other articles could not readily be met with in sufficient quantities, it became necessary to provide vinegar as a resource,

source, being a portable article. Vinegar, properly diluted with water, is well calculated for abating thirst, for furnishing perspirable matter, and thereby cooling the body; and it has also this advantage, that it may be drank a little warmed, without tasting unpleasant. This liquor certainly does not stimulate, and thereby enable the person who takes it to exert more strength; but, though exertions produced by stimulating and fermented liquors may answer for a particular occasion, yet, if frequently used, they must be injurious to the constitution. The ancients found this beverage of singular service, in preventing fevers, plagues, and putrefaction, and in giving a stimulus to the water they drank, by which it was prevented from lodging in the body *.

2. *Made Wines.*—Nature having denied the grape to northern countries, the inhabitants thereof, endeavour to make up for this want, by extracting a vinous liquor from other substances, as currants, raspberries, gooseberries, oranges, raisins, birch, alder, and cowslip; various receipts have been published, for making these kinds of wine, for which books on cookery may be consulted. In the course of the manufacture, it appears, that water, in different proportions, is mixed with the other ingredients. It was the fashion among physicians formerly, to reprobate home made wines as unwholesome, but that can only be the case, when their fermentation is not well conducted, or when they are made use of, before they have attained a proper age. If in these respects, they are not exceptionable, they are often, when made in private families, preferable to foreign

---

* Cheyne's Essay on Health, p. 58.—See also Lips. de re Militari Roman. Every Roman soldier was obliged to carry with him a bottle of vinegar, which Galen calls *psocha.* See also, Jackson on Fevers, p. 407.

wines, being at least, free from adulteration *. They ought to be prepared with raisins, instead of sugar, (being more congenial to the nature of wine), and with less water, and with a larger proportion of the natural juice of the fruit, than is usually the case.

3. *Cyder.*—The juice of apples, made vinous by fermentation, is known under the name of cyder, or *apple wine.* It is a wholesome liquor, provided it is properly made, and used with moderation. There is a celebrated proof of the wholesomeness of cyder, mentioned by Lord Bacon, who states, that eight old people, some of whom were near, and some above a hundred, who drank nothing but cyder all their lifetime, and yet were so strong at those ages, that they danced and hopped like young men. Cyder is sometimes fermented and kept in leaden vessels, which produces painful and dangerous colics; but that is the fault of the manufacturer, and not of the liquor itself. If drank to excess, it does not intoxicate so soon as wine, but the drunkenness it occasions, lasts longer, and is more injurious to the health †.

Cyders, at the same time, are but ill fermented, compared to wines, and are impregnated with much undecomposed acid; for the apple yields but a small quantity of saccharine matter, at least not sufficient, by its fermentative quality, to overcome the whole of the malic acid, which abounds in the fruit, and thus convert it into vinous spirit ‡.

---

* See Nisbet on Diet, p. 118.—Adair's Medical Cautions, p. 248. Also his Essay on Diet and Regimen, p. 46.

† Lemery on Foods, translated by Hay, p. 347.—Valangin on Diet, p. 131.

‡ See Rush's Inquiry into the Effects of Ardent Spirits, p. 21. The late frosts in spring often deprive the Americans of their apples. To obviate

This objection might be obviated by the addition of raisins, honey, or sugar, in moderate quantities. In America, cyder is reckoned perfectly wholesome. It sometimes disagrees with persons subject to the rheumatism, but it may be made inoffensive to such people, by extinguishing a red hot iron in it, or by mixing it with water.

Doctor Rush has given a receipt for making, what he calls *Pomona wine* from apples. It is made by boiling down two barrels of cyder, fresh from the press, into one, fermenting it afterwards; and, if kept for two or three years, in a dry cellar, it affords a liquor, which, according to the quality of the apple from which the cyder is made, has the taste of Malaga or Rhenish wine. It is a pleasant drink in summer, mixed with water.

Great quantities of cyder are brought to Paris; but as the Normans do not make good keeping cyder, it is a winter drink there, being always made in the preceding autumn. For the Parisians, who love sweets, it is also mixed with honey, &c. so as to be a corrupt and unwholesome beverage *.

4. *Perry*.—This liquor is the fermented juice of the pear; and, when properly manufactured, is an active and pleasant liquor, resembling much champaign, after it has for

---

viate this calamity, they give their orchards a north-west exposure, so as to check vegetation. When they expect a night of frost also, they kindle two or three large fires of brush, or straw, to the windward of the orchard. This easy expedient has often preserved the fruit, which otherwise would have been lost. Ditto.

* Pinkerton's Recollections of Paris, Vol. II. p. 207.—In the Lancashire Agricultural Report, p. 83. there is a receipt for making cyder with honey, so as to produce a liquor of excellent quality.

for sometime been kept bottled, but it hardly has the same exhilarating effects *.

Perry, if properly fermented, and of a proper age, is in general, reckoned a safer liquor than cyder, possessing less acidity. It is particularly recommended as counteracting the poison of mushrooms, or other fungous productions; and, in that case, is improved by an addition of some spiritous liquor. It is said, that all liquors of this kind, which are liable to produce flatulency and acidity, are much improved by their junction with sugar and aromatics, as nutmeg and ginger †.

5. *Malt Liquors.*—We are informed, that in very early periods of history, the art of making a fermented liquor from barley, was discovered by the Egyptians, which was anciently called barley wine, (*vinum hordeaceum,*) and was afterwards known under the name of northern wine, (*vinum regionum septentrionalium,*) being principally used in northern countries; (indeed, in hot countries, or in very warm weather it can hardly be made at all); and by some it has been called the strength of corn, or *liquid bread.*

In treating of this extensive subject, we shall consider, —1. The different sorts of grain of which malt liquors are made. 2. The different sorts of liquors made of barley, and the ingredients of each. 3. The advantages resulting from the use of malt liquors. 4. The objections thereto; and, 5. Shall add some miscellaneous particulars.

1. Malt liquors are principally made from barley, as that

---

* Both cyder and perry are sometimes adulterated with turnip and carrot juice, an adulteration not favourable in point of quality.

† Nisbet's Practical Treatise on Diet, p. 317. In Normandy they make a spiritous liquor, both from cyder and perry, which the natives of that country consider excellent of its kind.

grain gives out the greatest quantity of sugar under germination; but beer is also made from the infusion of malted oats, of malted rye, (which produces a drink lighter and more diuretic than the common barley beer), of malted wheat, and, in some countries, of malted maize, or rice. Sometimes also different grains are mingled together, as oats with barley, by which the liquor is made more cooling for summer, and consequently more wholesome at that season of the year *. In former times, it was not unusual to mix some peas with the barley, by which, strength was added to the beer, and it kept much longer †; but, on the whole, it has been found most expedient, to make beer from barley alone, or the inferior sorts called beer or big. In the years 1800 and 1801, when the price of grain was very high, they were allowed to brew beer from sugar and molasses, but only table beer was attempted.

2. The great division of barley liquors is, into small beer, strong beer, porter, and ale, to which purl and mum may be added, though not much used.

Small beer is best calculated for common or general use, being less heating and stimulating than other malt liquors, and when used soft and mild, being an excellent diluent with food; but if it is stale and hard, it is very apt to produce

---

* Venner in his Via Recta ad Vitam Longam, says, That beer made of barley and oats, in equal proportions, or two-thirds barley, and one of oats, is better than when made of barley alone, more especially in the hot seasons of the year, as it receiveth a singular cooling quality from the oat.

A sort of beer has also been made of two-thirds malt, and one-third *raw grain*, but it is not much esteemed, being merely attempted in consequence of the high duties on malt, and must be drank in three or four days after it is made.

† Hart's Diet of the Diseased p. 125.

duce cholics, and bowel complaints, by which many have suffered.

As this liquor, when fresh, abounds with carbonic acid, or fixed air, it is the most useful diluent for labourers, because it cools the body, abates thirst, and, at the same time, stimulates moderately the animal powers. It also affords more nourishment than water with acids, or spirits, and is found even useful in consumptive cases *.

Small beer ought not to have an over proportion of hops, but should be thoroughly fermented and purified, for all gross dregs must prove injurious to the animal system †.

The celebrated Sydenham was accustomed to take for supper, a draught of small beer, brewed with hops, which he considered as less likely to breed gravel or calculous matter, than the unhopped. He also took another draught when going to sleep, in order to dilute and cool the hot and acid humours lodged in the kidneys, which breed the stone. A large draught of small beer also, prevents bloody urine, if likely to be brought on by exercise ‡.

The strongest species of beer, is not so much in use now as formerly, owing to the introduction of that more fashionable liquor called porter. It is still, however, brewed where the art of making porter is not known. Strong beer,

---

* There is a particular kind of beer brewed at Ashburton in Devonshire, very full of fixed air, and therefore known by the name of *Ashburton pop*, which is supposed to be as efficacious in consumptions, as even the air of Devonshire itself.

† Falk's Guardian of Health, p. 148.

‡ See Swan's Sydenham, p. 590. It has been remarked, that neither stone nor gravel is known on the coasts of the Lothians, or of Fife, and this is attributed to the following circumstance. That a weak and pleasant species of malt liquor, which is lightly hopped, seldom kept long, and perfectly unadulterated, makes the common beverage in those districts.

beer, it is said, ought to have six properties. 1. A pleasant taste. 2. Being clear and thin. 3. Thoroughly fermented. 4. Old, and purged from dregs. 5. Of a medium strength; and, 6. Made of good materials *.

Strong beer is accounted more nutritious than wine, and more laxative, and, in moderate quantities, is of service as a wholesome, refreshing, and strengthening drink.

That species of liquor known in England under the name of *porter*, is prepared in a peculiar manner; and besides the ingredients commonly used in malt liquors, other articles are therein mixed †. It certainly was some years ago, not only a palatable, but even a wholesome drink, and would frequently agree with a weak stomach, when ale would not. But since such heavy duties have been imposed upon malt liquor, it has been greatly deteriorated, and cannot be so strongly recommended as it was some years ago. London porter, as formerly made, was certainly possessed of such stomachic and diuretic powers, as to give it, in many cases, a preference over common beer and ale. Being, however, strongly impregnated with bitters of a narcotic kind, it was apt to induce drowsiness,

---

* Venner's Via Recta ad Longam Vitam, p. 39.

† In a work, entitled Every Man his own Brewer, by Samuel Child, there is an account of the ingredients used in making porter, and the proportion and expence of each; but it is hardly possible that all these ingredients, more especially the more pernicious articles, can be essential in making porter. Some of them, as the coculus Indicus, &c. are prohibited to be used by law.—Accordingly, in a practical treatise on brewing, printed anno 1804, it is asserted, that, in addition to water, malt, and hops, nothing else is necessary, to make good porter, but liquorice root, Spanish liquorice, and coarse brown mixed sugar or treacle. Porter is made of high dried malt, or of malt burnt with brushwood; the hops are generally of an inferior quality to that employed in making ale.

and, consequently, was improper wherever there is a tendency to apoplexy, or affections of the head *. Porter requires exercise, and should not be drank too new. It is doubtless more perfect, and more digestible, when moderately stale †.

The liquor called *Ale*, was originally made in England of malt, barley, and yeast, alone. We are told by one of the oldest English writers on medical subjects, (Andrew Borde), that those who put in any other ingredient, sophisticated the liquor. It should never be drank under five days old. " It is," he says, " the natural drink of an Englishman, but beer, on the other hand, which is made of malt, hops, and water, is the natural drink of a Dutchman, and of late is much used in England, to the great detriment of many Englishmen ‡."

There was formerly a strong prejudice against hops in England, and they were for a long time considered as pernicious weeds. But they seem, on the whole, to be a useful addition to malt liquors. Without hops, or some such ingredient, we must always drink our malt liquors, either new and ropy, or old and sour; hops also are useful, for the purpose of making the liquor light and well flavoured; and without that ingredient, malt liquor would possess a clammy sweetness, or would soon turn sour and vapid. It is the hops that preserve malt liquor, strengthen the stomach, and dissolve the viscid phlegm. The addition of hops has a tendency to prevent flatulence and diarrhœa, which is apt to occur where they are not used. Indeed hops, are not only of use for enabling malt liquors to be kept to a proper age, but, by some authors, have been strongly recommended for their medicinal virtues, possessing grateful bitterness, agreeable to the stomach, and being very serviceable to digestion *.

---

* Practical Synopsis of the Materia Alimentaria, Vol. I. p. 103.

† Economy of Health, or a Medical Essay, p. 39.

‡ See Aiken's Biographical Memoirs of Medicine in Great Britain, p. 58. In the same work, notice is taken of an old practice in England, of drinking a large draught of ale, the first thing in the morning, for the benefit of the eyes, which is justly reprobated.

Hart, in his Diet of the Diseased, p. 125, also states, that ale was brewed without hops. But probably wormwood, ground ivy, or some other bitter was mixed with it.

According to Sydenham, small beer brewed with hops, ought to be preferred to that which has none, though unhopped small beer, is smoother and softer, and hence better suited to bring away the stone from the kidneys; yet that which is brewed with hops, on account of the slight stipticity it receives from the hop, is less apt to breed gravelly and calculous matter, than that which has none, as being more viscid and slimy †.

It is not to be wondered at, therefore, that even ale should at last be brewed with hops; but having a less quantity

---

* Curties's Essay on the Preservation and Recovery of Health, p. 69.

† Respectable authorities, however, are not wanting, who object to the use of hops. The celebrated Darwin remarks, that a continued use of bitter medicines, as of Portland's Powder, or of the Bark, is supposed to induce apoplexy, or other fatal diseases. Hence, it would appear, that the daily use of hop in our malt liquor must add to the noxious quality of the spirit in it; and, when taken to excess, must contribute to the production of the same disorders. Zoŏnomia, Vol. II. p. 735. Dr Falk also observes, (Guardian of Health, p. 147), that hops affect the nutritive qualities of malt liquor; and though the additional bitters may irritate the digestive powers, yet, from their similitude to bile, and a propensity to alcalescency, they must make malt liquors in general hazardous, except to labouring people, to whom the celebrated porter is a suitable drink. Sir William Temple prefers ale-hoof, or ground-ivy, to hops. See Code, Vol. IV. p. 355. An old physician, on the contrary, contends, that hops make beer a kind of medicinal drink, greatly tending to remove obstructions, and to cleanse the blood from all its corrupt humours. Venner's Via Recta ad Vitam Longam, p. 38.

of that ingredient, it lies heavier on the stomach; hence more attention ought to be paid to its age and fineness before it is made use of.

Formerly, they seem to have paid more attention to the brewing of ale, than at present. In order to have it properly prepared, it was directed, that the liquor in which the malt was infused, should not be boiled, but the water made boiling hot; nor should the hops be put into boiling water. In that way, only the finest and most valuable parts, both of the malt and of the hops, were extracted. It is by overboiling, that beer heats the body more than ale; and, though the liquor may keep longer, it is not so wholesome *.

The best ale is now made from fine pale malt †, and with hops of the finest quality; it is more nutritious than beer or porter, as the malt used in the manufacture is unburnt.

The best ales are certainly more nutritious than beer or porter †, but have a feverish tendency, and are improper for weak stomachs ‡. They ought only to be taken, therefore, in small quantities, by valetudinary, sedentary, studious, or contemplative people. At the same time, good ale, if not sophisticated, well fermented, and not too hoppy, may prove as beneficial towards a good chylifaction, as an equal share of wine, but it equally requires moderation.

Ale should sparkle in a glass, but the smaller the bubbles the better.

It

---

* Tryon's Way to Health, p. 116.

† When the malt is slenderly dried, the ale is *pale*; or *brown*, when the malt is more roasted; or *amber*, when the two sorts of malt are mixed together.

‡ Falk's Guardian of Health, p. 148.

It is observed, that new ale is the most nutritive; hence tipplers may be said, with Boniface, to eat, as well as to drink their ale; but old ale is the most intoxicating *.

Purl is a kind of medicated malt liquor, in which wormwood and other aromatic bitters are infused. It is not much in use at present, and is reckoned very unwholesome. Drinkers of purl are peculiarly liable to apoplexy and palsy †.

Mum is properly a German liquor. It is made of various sorts of grain, in the following proportions: To seven bushels of wheaten malt, add one bushel of oatmeal, one bushel of ground beans, and a variety of other articles, as the tops of fir, wild thyme, &c. &c. also ten new laid eggs. These articles ought to be infused in sixty-three gallons of water boiled down to forty-one. The English mode of making this sort of liquor differs considerably. But on the whole, as it is not to be accounted a wholesome beverage, it is unnecessary to dwell upon it more at length.

3. The arguments in favour of this species of liquid food are next to be considered.

Malt liquors form the proper wine of this country; and, if deprived of their fixed air, and well hopped, they are both nourishing and wholesome ‡. In these liquors there

---

* It is said that the word ale is derived from *alo*, to nourish.

Dr Cheyne remarks that a weak stomach can as readily, and with less pain, digest pork and pease soup, as Yorkshire or Nottingham ale. They make, he says, excellent bird-lime; and, when simmered some time over a gentle fire, make the most sticking and the best plaster for old strains, that can be contrived. Cheyne's Essay on Health, p. 60.

His antagonist, Strother, observes, in reply, that all farinaceous substances will do the same. Strother on Health, p. 72.

† Trotter on Drunkenness, p. 38. 39.

‡ Turnbull's Medical Works, p. 105.

are abundance of emulgent nutritious particles, which are easily converted into the condition of solids, and are able to afford us flesh as well as dilution. Indeed, malt liquors, properly prepared, are so balsamic and nourishing, that they often make up for the scarcity and coarseness of the meal.

Different sorts of malt liquors are used for different purposes. Small beer, if made from the first of the malt, with a moderate proportion of hops, and not kept too long, is a useful drink at meals as a diluent; and the stronger sorts, as beer, ale, and porter, provided they be not too strong, are wholesome, refreshing, and strengthening drinks; but are of so nutritious a nature, that they are best calculated for persons who lead a busy, active, and laborious life, than for the indolent and nervous.

It is a common observation, that those who drink malt liquors, are stronger than those who drink wine; and to those who are trained to boxing, and other athletic exercises, old home-brewed beer is particularly recommended, drawn from the cask, and not bottled.

Malt liquors have also been found of service, as a medicine, in the typhus fever, and other disorders. Two or three English pints of strong beer, have been given in a day for the typhus; and the feelings of the sick were the best proofs of its effects. They all agreed, that it did them more good than any thing. It has also been found, that bottled porter is one of the best ingredients in the diet of convalescent soldiers, and never failed to strengthen them quickly for duty [*].

Among other advantages that malt liquors have over wine, are the following: that they can be made at various

---

[*] Trotter's Medicina Nautica, Vol. I. p. 293.

seasons of the year, and not merely at one annual vintage; that they are of a more laxative nature; that they may be used with great advantage at sea, against that great enemy of the mariner, the scurvy; and they have over plain water this superiority, that the water thus taken is boiled, and hence freed from many noxious ingredients which may be found in plain water, but which, being mixed with the dregs of the malt liquor, and thrown away, are thus excluded from the body.

So much are those accustomed to this liquor, impressed with these ideas, that Jackson, the celebrated trainer, affirms, if any person accustomed to drink wine, would but try malt liquor for a month, he would find himself much the better for it, and would soon take to the one, and abandon the other.

4. This species of drink, however, has many objections urged against it.

Galen and Dioscorides, two celebrated ancient physicians, condemn malt liquors as unwholesome *. But it is probable, that in ancient times, they were not much acquainted with the art of preparing them, in the best manner.

It is objected to the use of those liquors, that they have a tendency to produce corpulency; and it cannot be denied, that strong ale or beer, when taken in great quantities, without a sufficient proportion of exercise, must render a man fat and unwieldy †. Without labour, or exercise

---

* Galen, Lib. VI. Sump. Medic. Dios. Lib. II. cap. 80, and 82.—Malt liquors are called by this author, Zythum et Curmi.

† The drinking of beer absolutely requires exercise; and it is known, that a person who used to drink three English quarts of porter a-day, without exercise, his mind at the same time constantly applying, from excess of study, and the porter he took, he brought on an obstinate diabetes. —Valangin on Diet, p. 131.

cise also, that excess of nourishment, which malt liquors contain, produces heaviness and torpor of mind; and the drinkers thereof are duller, and more phlegmatic, than those who confine themselves to the use of wine, and their understandings become enfeebled.

Thick beer, is highly improper for those, who are afflicted with the gravel, and malt liquors are said to breed the stone*; but that can only be the case, when they are drank in a thick and muddy state, not properly fermented, and drank too new. Indeed, Cyprianus, an eminent cutter for the stone, observed, that none who drank malt liquor *solely*, ever came to him as affected with that disorder; and it is proper to remark, that it is never heard of among brewhouse servants †.

Malt liquors, seldom agree well, with sedentary or bilious persons, and are highly improper for the corpulent and asthmatic, or those who are liable to giddiness, or other complaints in the head. From the variety of modes also, in which these liquors are prepared, they are very unsuitable drink to those who are very much addicted to travelling, as the nature and quality of the liquor, differs almost at every stage.

It is farther objected, that new beer disorders those who have weak bowels, and that when it is kept long, it is apt to become sour and vapid, so that there is but a medium time when it can be drank to advantage.

In countries where wine is produced, beer is not only considered as a bitter and disagreeable drink, but as occasioning the scurvy, the leprosy, and other disorders.—In such countries, however, there must be a prejudice against the liquor; the same pains are seldom taken in the manufacture of it; and, indeed, owing to the heat of the climate, it is impossible to make it in general so good.

---

* Beer, when drank to excess, is apt to form stones in the gall-bladder; but this last effect may be prevented by the moderate use of brandy.—Valangin on Diet, p. 129.

† Sedgewick's Treatise on Liquors, p. 372.

The last objection to malt liquors is, that it is much more injurious to the health, to be intoxicated with ale, or beer, or porter, than with wine, the effects of the debauch continuing longer, than that produced by any other kind of beverage*.

On the whole, however, it would appear, that the objections to malt liquor, are more levelled at the abuse, than the proper use of that article.

5. On the subject of malt liquors, there are many miscellaneous observations, which could not be comprehended under any peculiar head.

Malt liquors are a useful species of drink to the weak, the lean, and laborious, provided they are not very subject to flatulency, nor troubled with diseases of the breast.—They are also recommended to wet nurses. The sweet beers are certainly nourishing, but the bitter sorts are strengthening also, being beneficial in a weak state of digestion; and those who live chiefly on vegetable diet, and whose stomachs are weak or impaired, may be greatly invigorated, by a moderate use of strong, and bitter malt liquors, a purpose which the common table beer cannot answer.

The qualities and effects of beer, depend greatly upon the particular kind of corn; the method of malting it; the quantity of malt; the quality of the water; the particular kind of aromatic bitters put in to preserve it; and the mode of brewing, which varies considerably in different countries, and even in the same town or street*.

---

* It is said, that hogs and poultry fed at distilleries, are so diseased, that if they were killed at a certain period, their flesh would be unfit to eat. But this is owing to their want of fresh air and exercise, and their being almost entirely fed on the dregs, or refuse of the distillery.

When a full and complete fermentation takes place, the viscid or nutritious particles in malt liquors are converted into spirituous, and the liquor becomes more stimulant and intoxicating, but less nourishing, and less viscid. In England, malt liquors are, in general, properly fermented; and when intended for warm climates, the grain is twice mashed, and twice boiled. In German ales, on the contrary, little or no fermentation is permitted to take place; and in the Dantzick black beer, in particular, only a half fermentation is allowed.

Malt liquors are drank either from the cask, or bottled.

In the first state, containing but a small proportion of fixed air, it agrees better with the stomach, and does not subject it to flatulence and eructation; but bottled porter or beer, on the other hand, have their advantages, being better calculated to allay thirst, and being useful in putrid habits †.

Wholesome beer should be clear and limpid, and not heady. The nearer it approaches to the nature of wine, the better. When it foams much, and makes a head, as it is called, it is a sign that it has been imperfectly fermented, or that improper ingredients have been mixed with it, and, consequently, that it must be unwholesome.

Ale and porter of the best quality will, if properly managed, keep twenty years sound. But all fermented liquors undergo changes, and more particularly in time of frost.

---

* Valangin's Treatise on Diet, p. 126.—See also, Hart's Diet of the Diseased, p. 125; where a variety of other particulars are adverted to.

† There is much nicety in bottling and the treatment afterwards, as to which, see Nisbet on Diet, p. 310.

The best time of the year, for brewing good beer, is in cold weather.

The malt liquors, however, even in this country, do not undergo so complete a fermentation, as the product of the grape in warmer latitudes. It is, therefore, apt to disorder the stomach by a slight fermentation afterwards in the body, a process, that persons of weak digestive organs, cannot suffer without much pain *.

As small beer is apt to become sour in warm weather, in its room a pleasant beer may be made, by adding to a bottle of porter, ten quarts of water, and a pound of brown sugar, or a pint of molasses. After they have been well mixed, pour the liquor into bottles, and place them, loosely corked, in a cool cellar. In two or three days, it will be fit for use. A spoonful of ginger, added to the mixture, renders it more lively, and agreeable to the taste†. This might be adopted in the navy instead of grog.

Malt liquors, on the whole, being so well calculated for the people of this country, it is a most unfortunate circumstance, that the pressure of taxation, should prevent their being made of such wholesome materials, and in so skilful a manner, as was formerly the case. It is rare that one meets with pure unadulterated malt liquor, except in the houses of old English families, where one sometimes partakes of that *real barley wine*, that was formerly the boast of England.

6. *Spruce Beer.*—This article is made from a decoction

---

* Trotter's Essay on Drunkenness, p. 38.

† Rush's Inquiry into the Effects of Ardent Spirits, p. 22.

of the spruce fir. It is a powerful diuretic and antiscorbutic, but it is too cold for some constitutions. Containing a large quantity of fixed air, it is highly refreshing in summer, and sits easy on the most debilitated stomach; but, from its peculiar flavour, it is disagreeable to the taste of many.

Spruce beer does not require any malt liquor to be mixed with it, as some imagine from its name. The following is one mode of making it.—Take of water 16 gallons, and boil the half of it; put the water thus boiled, while in full heat, to the reserved cold part, which should be previously put into a barrel or other vessel; then add 16 pounds of treacle or molasses, with a few table spoonfuls of the essence of spruce, stirring the whole well together; add half a pint of yeast, and keep it in a temperate situation, with the bung hole open for two days, till the fermentation be abated. Then close it up, or bottle it off, and it will be fit for being drank in a few days afterwards. It is a powerful antiscorbutic, and very useful in long voyages; and, by means of the essence, it can be prepared with little difficulty, in places where the spruce fir itself cannot be got.

7. *Honey Liquors.*—That useful article honey, is not only of importance as food, but is also extremely valuable from the liquors which may be made from it. These are commonly known under three names,—1. Hydromel. 2. Mead; and, 3. Metheglin.

Hydromel is made by boiling honey with water, and the addition of aromatics, as cinnamon, ginger, nutmegs, and cloves, without subjecting it to fermentation; consequently, it does not, strictly speaking, come under the head of fermented liquors, but it was not worth while to separate it from the other sorts of liquids made with honey. It may be used as table beer for common drink.

Mead is made in the same manner, but is subjected to fermentation, by the addition of yeast, whence it obtains a vinous quality. When kept to a proper age, it becomes clear, fine, and has a pleasant taste. It is considered as particularly useful in nervous cases, being a powerful cordial, and approaching, in its nature, to the wines of Spain and Portugal; though it differs from them in possessing, along with its stimulant, a nourishing quality. It forms, therefore, the most proper drink for the aged and infirm, and is also peculiarly well suited to the winter season.—With many constitutions, however, honey itself disagrees, occasioning uneasiness of the stomach, and bowel complaints; wherever that is the case, mead forms an improper beverage. Even when it does agree, it should never be drank till it is fine, as it contains more viscid parts than other vinous liquors, all which should be fully deposited before it is tasted.

The difference between mead and metheglin, principally arises from the proportion of honey in each. Mead consists of one part honey, and four times as much pure water; whereas metheglin contains only two parts of water to one of honey, Besides the aromatics used in mead, certain herbs, as rosemary, hyssop, thyme, and sage, are also mixed with it; metheglin is said to be a liquor exceeding wholesome in the winter season, more especially for old people, having a singular property of heating the body and removing phlegm, but it must not be taken new, and requires to be thoroughly fined *.

Liquors made of honey, are prepared in the greatest possible perfection in Poland; in particular, that sort known there

---

* Venner's Via Recta ad Vitam Longam, p. 44. Dr Falk, in his Guardian of Health, p. 147. says, that well made metheglin, is the most generous drink in nature, suited to our climate.

there under the name of *Lipets*. It is clear, and sparkles like Champaign, and by many is thought superior to that far famed liquor, both in strength and flavour. The honey in Poland is, in some districts, particularly Lithuania, of an uncommon good quality, which may account for the excellence of the article manufactured from it.

4. *Distilled or Ardent Spirits.*

THE last, and undoubtedly the most fatal discovery, in the art of making liquor for the use of man, is that of ardent spirits; an invention which, it were to be wished, had never been made, from the various pernicious consequences which have resulted from it. In some particular cases, spirituous liquors may be of use in medicine, and sometimes even diet, but Haller is disposed to include them, among the poisonous, rather than the useful liquids *.

It is supposed, that the art of procuring ardent spirits by distillation, was a discovery of the Arabian chemists. They obtained it from rice, whence it took its name of *arrack*. At present, it is generally procured by the distillation of fermented liquors. In France, it is drawn from wine, cyder, and perry. In England, and in Germany, from malt liquors; and, in this country, and the West India islands, from sugar and molasses. Ardent spirits, from whatever substance they are obtained, are found, if freed from their volatile oil, to be essentially the same. By repeated distillations, they are more completely purified, and then they obtain the Arabic name of *alcohol* *.

---

* Physiol. Vol. VI. p. 251. The pernicious effects of spirits upon horses, have been very accurately ascertained, by the experiments of Pelger; and indeed they proved to be as injurious, as various poisons tried at the same time. See Beddoes's Hygëia, Vol. II. Essay VII. p. 26.

There is a very little difference between one spirit and another in their effects, though there is a variety in regard to their taste and flavour. This subject, however, has been frequently discussed, owing to the interested views of the dealers in spirits. Those who imported brandy, took care to trump forth the virtues of that article; whilst the West India merchants and planters, on the other hand, thought it necessary to publish a defence of the superior qualities of rum †. In general, however, it has been remarked, that brandy is the most bracing and stomachic, and the best calculated for medicinal purposes, for instance, in the preparation of tinctures, &c. Gin and whisky, or malt spirits in general, are the most diuretic and sudorific, and, when properly prepared, are the best calculated for internal use in cold and damp weather; rum and arrack, are the most stiptic and heating, and the most likely to occasion complaints in the head, more especially, if taken to excess ‡.

---

* In the *Annales de Chymie* for July 1806, (Tom. 95), there is a report regarding spirits, considered as a drink for the use of troops, by the celebrated Parmentier. The object of this report was, to ascertain, whether *brandy*, (l'eau de vie), *or pure spirits of wine*, (alcohol), is the fittest for the use of troops. The result of the report is, that it is most for the advantage of the government, and of the soldier, to distribute the natural spiritous liquors of the country, than spirits of wine; or, in other words, to give brandy in the wine countries; spirits made from cyder and perry, in Normandy; and made of corn in Belgium and Holland.

† See an Essay on Spiritous Liquors, with regard to their effects on Health, in which the comparative wholesomeness of rum and brandy are particularly considered, by R. Dossie, Esq.

‡ Practical Synopsis of the Materia Alimentaria, Vol. I. p. 106. The intoxication produced by brandy is more lively and furious, and that from rum more stupid and beastly.

The qualities of all these different sorts of spirits are much improved by long keeping; and, indeed, I have tasted whisky above forty years of age, which had thereby obtained the softest and most balsamic qualities; and brandy, that had been kept in a cask for above fifty years, had its quality thereby materially improved.

In a medical point of view, spirits have some advantages. When taken judiciously, they are of considerable service in preventing the bad effects of a moist and cold atmosphere, of pestilential vapours, of very unclean occupations, of a damp military camp, and occasionally, too, of a temporary abstinence of food. They are also of use in making a number of medicinal preparations, as elixirs, tinctures, essences, &c.; and, when applied *outwardly*, great benefit is derived from them, in preventing the bad effects of cold and damp, and restoring warmth and circulation. But the bad effects of habitual dram drinking, as summed up by Haller, greatly overbalance these advantages *.

Spirits are principally of use in three cases; 1. As a cordial, when the body has been suddenly exhausted of its strength, and a disposition to fainting has been induced.—2. When the body has been exposed for a long time to wet weather, more especially if it be combined with cold. Here a moderate quantity of spirits is not only safe, but highly proper, to obviate debility, and to prevent a fever.—They will more certainly have those salutary effects, if the feet are at the same time bathed with them, or a half pint of them poured into the shoes or boots *; and, 3. In those calamitous cases, when any exercise that can be obtained is insufficient for resisting cold, wet, &c. Thus, we find, in the instance of the men who were in the boat with Captain Bligh, after the mutiny, exposed, for nearly a month, to cold, wet, and hunger, what a powerful effect even one tea-spoonful of rum daily had, in fortifying them against such hardships†. As to spirits being useful in warm weather, that cannot be admitted; for whether used moderately, or in excessive quantities, they diminish the strength of the body, render men more susceptible of disease, and unfit for any service in which great vigour or activity is required‡.

---

* It is a custom, he observes, which, if persevered in, contracts the stomach itself, and the passage from the stomach into the intestines. It also renders the fibres of the stomach callous and fragile, and insensible to every stimulus, even that of hunger. It contracts the diameter of the vascular system in general. It narrows the air vessels of the lungs, even to a third of their former size. It tends to coagulate all the humours of the body, the aqueous excepted. It produces ossifications of the tendons and arteries, and, in some instances, of the pleura itself, and often brings on schirrus of the whole viscera and glandular system. It induces also tumours, convulsions, and palsy, of the nervous system.—Vide Haller's Physiol. Lib. XIX. sect. 3.

Formerly a variety of cordials were kept in private families, and in the apothecaries' shops, which were not more medicinal than plain rum or brandy; but now that absurd practice is less frequent, even with the few Lady Bountifuls of the present generation, whose predecessors wasted much time and money, in distilling their closet cordials, and in poisoning their families, and half their neighbours, by dispensing them§.

---

* Rush's Inquiry into the Effects of Ardent Spirits.

† Code of Longevity, Vol. II. p. 40.—Note.

‡ Rush's Inquiry, p. 17. Yet I understand it is remarked, that those men who saw wood in the burning streets of Florence, in the summer season, will often drink brandy to allay their thirst, rather than their weak pleasant wines.

§ Adair's Essay on Diet and Regimen, p. 52.

There can be no doubt, that many persons have to date their first propensity to drinking, to the too frequent use of spiritous tinctures, as medicines, rashly prescribed for hypochondriacal complaints. There are patients who are continually craving after medical novelties, or quack medicines, and who are in the practice of taking every article that is warming and cordial.

It is a custom, not uncommon in some families, but particularly at feasts and entertainments, to hand cordials round in the time of dinner, though it is contrary to all the rules of temperance*. It is deceiving the unwary; for I am sure, there are many who drink *liqueurs*, who would blush to taste brandy undisguised. Many of these cordials are impregnated with narcotic substances, which add to the noxious qualities of the spirit. Indeed there is hardly any ingredient infused with spirits †, water alone excepted, that does not render them more pernicious.

The liqueurs are fortunately more used on the Continent than in Great Britain. They are more insidiously dangerous, as they are very palatable. Many persons of worthy and respectable characters have been insensibly and inconsciously led into the fatal habit of tippling, by a frequent use of closet cordials and liqueurs ‡.

---

* Not only after the desert, but also about the middle of dinner, it is not unusual, at French dinners, to have a glass of Jamaica rum, wormwood wine, or that of Vermouth, handed round, for the purpose of restoring the appetite to its original vigour. After the desert, coffee and *liqueurs*, are generally served. See Pinkerton's Recollections of Paris, Vol. II. p. 207.

† What is called ratafia ought to be particularly avoided. It is made by infusing in the spirits the kernels of apricots, or bitter almonds, or even laurel leaf, by which means two poisons are taken at once.

‡ Adair's Medical Cautions, p. 250.

A respectable American physician, (Dr Rush), has written a short, but valuable treatise on this subject, which ought to be reprinted, and circulated in this country. He there considers the effects of ardent spirits, as they appear in a fit of drunkenness; the chronic effects of their habitual use upon the body; their effects upon the mind; and their effects upon the property of those who are addicted to the use of them; forming altogether a mass or combination of calamity, which would stagger the most habitual drunkard. It may be proper to observe, that in training men for athletic exercises, spirits are never allowed, on any consideration whatever, not even with water.

So pernicious is the use of spirits, that it has been often recommended to Parliament, totally to prohibit the manufacture of them; and, indeed, a concurrence of established governments, to prevent the maufacture altogether, excepting in small quantities, for medicinal purposes, would be more humane and philanthropic, than even the proposed union for the abolition of the slave trade *.

We shall now proceed to consider, the nature and effects of ardent spirits, either mixed simply with water, or converted into the liquor called punch.

Spirits and Water.—However dangerous the occasional taking of spirits unmixed has been accounted, yet *the constant use of them with water*, is perhaps a more fatal practice, as the strength of the mixture is perpetually increasing,

---

* An intelligent correspondent has proposed it as a most desirable regulation, that spiritous liquors should only be permitted to be sold, *undiluted*, by none but the apothecaries, and then only to patients, in small quantities. It would answer every purpose of utility, and save many lives, if the merchants were only allowed to sell them at half the strength, or rather one third the strength of proof spirit, that is, about the strength of strong grog.

until at last the proportion of spirit will equal, if not exceed that of the water, and it becomes hardly possible, to renounce a custom, to which the stomach has been long accustomed.

A respectable physician, (Dr Falconer), has written a short, but valuable tract, in which this subject is particularly discussed. He observes, that some medical men have unfortunately been led, to give a most exceptionable direction with respect to diet, that of substituting brandy, or rum, diluted with water, for common drink; and it is not only prescribed in extraordinary cases, as a temporary expedient, but is frequently directed, in almost all cases of any weakness in the stomach, or digestive organs, *as a perpetual article of diet.* He justly adds, that no circumstance ever occurred in medicine, more injurious to the science, or fatal to mankind, than this unfortunate piece of advice.

This odious and insidious practice cannot be too strongly reprobated; and having seen many who have severely suffered from it, I feel it the more incumbent upon me, to give a statement of the arguments which have been urged against the practice, and a refutation of those which have been adduced in its behalf.

Such a custom is apt to produce, in a great measure, all the bad effects of habitual dram drinking. The use of spirits in this way, is the more dangerous, as being more delusive; and is the more apt to be indulged in, as being often advised by the faculty. Besides, the consequences of an excess, are not so immediately ascribed to their true cause, as in case of habitual dram drinking, and of course not so likely to be guarded against.

It is said, that the mixture may be exactly proportioned, in point of strength, to malt drink, or any other liquor to which we have been accustomed; but though spirits may be diluted to a proportionable strength, they cannot be equally innocent with those liquors *. They are evidently more inflammatory, and consequently, are more apt to produce complaints in the liver, and other disorders.

It is contended, that spirits may be procured every where in tolerable perfection, and nearly the same in point of quality, which is not the case with wine and malt liquors. Were this admitted, it could only justify a partial and occasional use of the mixture.

It is also said, that spirits and water are incapable of either the vinous or acetous fermentation, and that it also checks those fermentations in other substances ; hence that it must be highly serviceable in cases where the stomach is apt to be troubled on that account. But this cannot be admitted. The presence of air in the intestines is, to a certain extent, necessary and useful, and serves important purposes in the animal economy. By guarding too much, therefore, against flatulence in our food, we are apt to bring on a costive habit, the source of innumerable disorders, and a habit which spirits and water has a peculiar tendency to occasion or to aggravate.

It is also said, that this kind of liquor is taken, without inconvenience, by the inhabitants of our West India islands, and by our seamen. But this arises in a great measure from necessity. In regard to the West Indians, they generally mix their spirits and water with sugar, and some acid fruit, which corrects the heating, and noxious qualities of the spirit ; and they live more on vegetable diet, than those generally do, to whom that sort of liquor is recommended

in

---

* It is universally found, that the constitutions of those who indulge in the use of wine or malt liquors, are more robust than those who use brandy, or rum diluted with water.

in Great Britain*. Besides, the state of health enjoyed by the inhabitants of the West Indies, where they are so subject to cramps, palsies, consumptions, and other disorders, furnishes no argument in favour of that beverage. As to our seamen, it is well known, that, whenever it can easily be got, beer is given them in preference.

An account of a case connected with this subject, is given by Dr Valangin, which ought to be generally known. A respectable lawyer, through custom more than choice, had got into the too fashionable mode of drinking brandy and water, which destroyed the balsamic qualities of his blood, depraved his appetite, depressed his spirits, and dried up his nerves to such a degree, that he could hardly support himself, without having daily recourse to the same liquor, till a severe fit of the gout, attended with a train of nervous and spasmodic complaints, was very near destroying him. But, by the advice of his physician, he was prevailed upon to renounce this unfortunate habit, and benefited by the change †. It can hardly be doubted, indeed, that this dangerous practice may, either at once, or gradually, be given up, and, in its room, that either toast and water, carefully prepared, or cold tea, or wine and water, or some species of malt lquor, may be safely substituted.

Punch.—No species of liquor has been more condemned, ed *, or more loudly celebrated, than punch. This drink consists of spirits diluted with water, and a certain proportion of acid and sugar, making a mixture of substances very opposite in their nature, being strong and weak, sweet and sour. Some contend, that half a pint of old strong beer, in a moderate bowl of punch, will mellow the fire of the spirit considerably, or that half a pint of green tea is a useful additional ingredient. Where the acid does not disagree with the stomach, punch is certainly wholesomer than *grog*, (or spirits and water), or *toddy*, (which is grog with the addition of sugar) †. When punch is made in perfection, the water should be thoroughly boiled, the sugar, the water, and fruit, should be well mixed before the spirits are put in, and the fruit used should be ripe and generous.

---

* This subject is more fully discussed in Dr Falconer's Observations on some of the Articles of Diet and Regimen usually recommended to Valetudinarians, p. 43, &c.——It is said, that the late Dr Fothergill, who was among the first that sanctioned this practice, declared, some time before his death, that he repented of having done so, from the unfortunate habit some persons had acquired from it.—Adair's Medical Cautions, 2d edition, p. 345.

† Valangin on Diet, p. 140.

As punch was some years ago the principal liquor drank, after dinner and supper, at Glasgow, (which I knew from having been educated at the university there), I thought it right to inquire into the effects of that practice, on the general health of those who took it, and whether it had any particular effect in producing, or preventing, the gout or gravel. The answers to those inquiries, differ so much from each other, that it is impossible to draw any positive conclusion from them, though, on the whole, the evidence seems to be rather favourable to the article in question.

It appears from these answers, that the most opulent merchants

---

* Cheyne in his Essay on Health, p. 55, says, That, next to drams, no liquor deserves to be more STIGMATIZED, and banished the repasts of the tender, valetudinary, and studious, than punch. It is a composition of such parts, as not one of them is salutary or kindly to such constitutions, except the pure element in it.

† It is remarked, that the drinkers of toddy get sooner intoxicated than those who drink punch.

merchants in that great commercial city, do not drink so much punch as formerly, wine having become a more fashionable drink; and, instead of one overflowing social bowl, in the preparing of which more attention was paid to the cookery, every guest now makes his own punch, in a separate glass or tumbler.

The punch that was the ordinary drink of the people of Glasgow, some years ago, was in general made weak, with more or less acid, according to taste. Great care was taken to use none but the best old Jamaica rum. This kind of liquor might be drank in large quantities with safety; it passed freely off by the kidneys and skin; and seldom occasioned a head-ach. Many persons, I am informed, used this drink, for a great number of years, without feeling any bad effects from it, and arrived at a good old age, in health of body, and vigour of mind, "and I believe, (adds one of my informants), that punch is the safest of all drinks *".

With some persons, the acid used in punch is found not to agree, occasioning heartburn, and unpleasant acidity in the stomach; but the effect can be easily corrected by a little magnesia. Persons who have injured the tone of their stomachs by dram drinking, or using high seasoned dishes, are those with whom the acid is most apt to disagree. The stone is a disease very little known in Glasgow; and the gout, hitherto, has been seldom heard off. The punch formerly used, had little tendency to produce either of these diseases, unless where there existed a strong hereditary

---

* Punch, says Dr Falk, Guardian of Health, p. 149, is an extemporary kind of wine; and, if judiciously made, there is no doubt of its being the finest drink in the universe to the palate, but there is not a more pernicious liquid to the constitution, *if abused.*

hereditary disposition to it. They are now more frequent than formerly, and will increase, as the luxury of the table, and the use of wine, and strong ale, increases.

From another respectable quarter, I am informed, that in the best society of Glasgow, neither wine nor punch is drank to such excess as formerly; that, in cold weather, some drink hot punch; in warm weather, all drink it cold; nay, those who value themselves on the superior flavour of their rum or fruit, drink it cold *at all times*. There can be no punch without souring, which is disused by those only whose stomachs cannot bear acids; these drink toddy.

Some do, and others do not take punch, both after dinner and supper. Every guest has the offer of it at both meals, and it is pretty generally used after supper, as well as dinner, but in the best society, it is used *moderately* on both occasions.

There are many suppositions regarding the peculiarities of Glasgow, in respect to living and disease, but in general more fanciful than just. It is very generally believed, that gout and gravel are less prevalent there, than in other great towns, but an inquiry into the causes thereof would lead to much discussion. Besides drinking more punch than wine, the merchant of Glasgow, spends a great part of the forenoon, in healthful exercise, by which he avoids many diseases, incident to those, who are daily cooped up in crowded courts, or in small apartments, among musty papers.

Whatever are the effects of punch, taken in moderation, yet, when drank in great quantities, it must weaken the stomach; and has a great tendency, when conjoined with other causes, to bring on the gout, the gravel, and other disorders of a similar nature *.

---

* Dr Adair observes, (Essay on Diet and Regimen, p. 47). That

III.—OF THE RULES TO BE OBSERVED, AS TO THE CONSUMPTION OF LIQUORS, IN REGARD TO TIME AND QUANTITY.

THE necessity and uses of liquid food having been already explained, and some account having thus been given of the different kinds of liquids commonly made use of, the only other point that remains to be considered is, the rules that ought to be observed in regard to the consumption thereof.

It is universally admitted, that excess in liquid food is less dangerous than in solid; but that does not justify excess in either, and when either the one or the other is too much indulged in, the consequences must, sooner or later, be fatal.

The points to be considered under this general head, are,—1. The total quantity of liquid food that ought to be taken in a day.—2. At what times that quantity should be taken.—3. Whether in a hot or a cold state.—4. What diluent is the best calculated for digestion; and, 5. What miscellaneous rules ought to be observed in regard to drinking.

1. Some advise those persons whose stomachs are weak, and digestion imperfect, to take their food as dry as possible, or to drink as little as they can of any liquid with their meat. But where this restriction has been attempted, it

---

punch, which is a species of wine, is the safest manner of diluting ardent spirits; both the acid and sugar counteracting the stimulus of the spirit. It is therefore a safer drink than grog or toddy. A very strong man, who drank grog instead of punch, found that his hand shook. He returned to his weak punch, and his hand became steady.

it is apt to produce, or to increase, a costive habit, the source of so many disorders [*].

It must be admitted, that in general we drink too much, and thereby weaken the activity of our digestive powers [†]; but there are some persons, on the other hand, who drink little at meals, and rarely at any other time. We are told of one young man, in particular, who, for a considerable space of time, had not drank with his meat, in consequence of which, he had a very florid complexion, and a scorbutic eruption all over his body. It thence was evident, that there was too great a proportion of the red part of the blood to the serum, and he was freed from the eruption, merely by drinking with his meat, without any other remedy [‡].

It is asserted, that some coal-heavers and porters in London, will consume four gallons of ale or porter in the space of twenty-four hours. This quantity could not be long continued. A marine, in a King's ship, was accustomed to drink four gallons of beer in the day; but he soon grew bloated and stupid, and died of an apoplexy [§].

One of the most extraordinary instances of drinking on record, is that of Mr Vanhorn, a Hamburgh merchant, formerly of Broad Street in London, who used to frequent the Bull-inn, Bishopsgate Street. He continued to do so, and presided at a daily meeting there, for three and twenty years successively. During the whole of that time, (two days only excepted, when called off to attend family funerals), he drank in that house four bottles of red port wine per day, and began a fifth. In the space of three and twenty years, it is computed, that he drank, in all, thirty-five thousand six hundred and eighty-eight bottles, or fifty-nine pipes of red port *. It does not appear, that Mr Vanhorn found this regimen favourable to longevity, indeed it is more than probable, that it cut him off before he had lived half a century. It is incredible, what pleasure any individual can feel, in such abundant potations, in the course of which, he resembles more a cellar than a man, for there are many cellars that never contained what this man's stomach must have done, namely, fifty-nine pipes of port wine.

---

[*] Falconer's Observations on some of the Articles of Diet and Regimen, p. 14.

[†] The trainers to athletic exercises remark, that drinking much, swells the belly, is bad for the wind, and encourages soft unhealthy flesh.

[‡] Robinson's Dissertation on the Food and Discharges of Human Bodies, p. 65. In the Medical Transactions, Vol. II. No. 19. p. 275. there is an account given of Mr Thomas Wood, a miller of Billicary in Essex, who hardly took any liquid food at all, but this was a very particular case, with a view of reducing corpulency.

[§] Trotter's Essay on Drunkenness, p. 157.

Having stated these extremes, we shall now proceed to consider what is the proper medium.

The principal uses of liquid food, evidently are, to dilute the solid food, and to preserve the blood in a proper state of fluidity. The proper proportions between the two sorts of food are thus stated by an intelligent physician. If we suppose the whole weight of solid food, in twenty-four hours, to be a pound and an half, then double that quantity, or three pounds of liquor, one pound to consist of strong liquor, and two of some aqueous fluid, will, on a medium, be sufficient to dilute the solid food abundantly. A larger quantity, he observes, would but distend the vessels, and carry off the finer parts of the chyle by water, or perspiration, which are constantly, and necessarily increased by

---

* Gentleman's Magazine, Vol. LXXI. p. 591.

by an over dose of fluids. A less quantity than what is above stated, would not sufficiently dilute the food, or preserve the blood in a state of fluidity *.

Some will object to the smallness of the quantity, but it is to be observed, that three pints per day, is all the quantity allowed to boxers, when trained to athletic exercises †, and, consequently, is sufficient for the acquirement and the preservation of strength in this climate. Three pounds, however, would be found too small in hot countries, or in cases where the individual is obliged to undergo great labour, and, consequently, where the perspiration must be abundantly supplied ‡.

Some will object to the proportion of only two to one. But it appears, from Robinson's Dissertation on the food and discharges of human bodies, that this is the medium rate of those, who have tried accurate experiments with liquid and solid food. According to Sanctorius, but he reckons it a disproportion, the drink to the meat was above ten to three in temperate bodies. Cornaro's drink to his meat, was as seven to six. Mr Rye's, in winter, as four to three. Dr Lining's, at a medium for a whole year, as eleven to three; and Robinson's drink to his meat, as five to two. A mean taken from all these, makes the drink to the meat to be as 2,176 is to 1000, above two to one, a proportion

---

* Cheyne's Essay on Health, p. 68.

† The ancient athletæ were allowed a very small quantity of fluid; and this *dry diet*, as it was called, seems to have constituted an essential part of their regimen. See Dr Buchan's Letter, in the Code of Longevity, Vol. II. Appendix.

‡ Smith, the celebrated Yorkshire trainer, recommended from three to four pints of good old ale, with a toast, to be taken at different times in the course of the day. In regard to wine, in cases of diarrhœa, he allowed a few glasses of red port per day; and, for three or four days previous to the conclusion of the training, a gill per day of mountain wine to be taken at twice.

portion which Robinson kept in a number of the experiments he tried.

Many people suppose, that it is of little consequence what quantities of liquids they take, being so easily digested; but this is a mistake, for wine, and other strong drinks, are as hard to digest, and require nearly as much labour of the concoctive powers, as solid and strong food itself. Nay, it is proper to observe, that such liquors, by their heat and activity, hurry the food unconcocted into the habit of the body, and by that means, lay a foundation for fevers, colics, gout, and several chronical distempers[*]. This proves the advantage of having them properly diluted.

As to quantity, it is justly observed by Arbuthnot, that the great secret of health is, keeping the fluids, in due proportion, to the capacity and strength of the channels, through which they pass. But the danger is less, when the quantity of the fluid is too small, than when it is great. For a smaller quantity of fluid will pass, where a larger cannot, but not contrarywise[†]. Hence it appears, how essential it is to avoid excess in quantity, and that it is better to be rather under, than over the mark.

2. It is recommended, as a good general rule, to drink when one is thirsty, as thirst denotes the want of liquid nourishment; but it is a much better system, unless in very particular circumstances, to drink only with solid food, and never on an empty stomach, or after long fasting.

In ancient times, it was considered to be a useful practice, to take, between meals, a large draught of white or Rhenish wine, or stale beer, in order, as it was said, to wash and cleanse out of the stomach, the relics of the food that formerly had been eaten, and to promote the distribution of the chyle *. But this habit is now given up. The ancient customs also, of drinking fasting, both morning and evening, and of taking a posset just at going to bed, are all happily exploded.

---

[*] Lynch's Guide to Health, p. 225.

[†] Arbuthnot on Aliment, p. 167

The quantity of liquid food, at the three great meals of breakfast, dinner, and supper, ought to be nearly the same, but more at dinner, than either at supper or breakfast.

It is a good rule, to drink little and often at meals, rather than a great draught at once; and hence the modern custom of using small glasses, is better than the old one of drinking out of large tankards, which tempted many, to take a greater quantity of drink than was necessary.

The meals ought to be as regular as possible †. The stomach thus gets into the habit of expecting food at a stated hour, and will be better prepared to digest it. The irregularity of the meals in London, has been long considered a very material disadvantage to those who are exposed to it.

It is much disputed, whether drinking wine in time of dinner, ought to be practised in this country. Dr Trotter calls it *downright pampering*, and contends, that it vitiates the taste and healthful appetite ‡. On the other hand, it is asserted, that one or two glasses may be taken during dinner, even by those who have not reached their fortieth year, not only with impunity, but even with advantage, provided the allowance after dinner is proportionally abridged *.

---

* Venner's Via Recta ad Vitam Longam, p. 192.

† There is no impossibility to enforce regular hours, even in London. A near relation, and particular friend of mine, (William Bosville, Esq. of Welbeck Street,) has laid it down as a rule, to dine at five o'clock *precisely*, and though his friends are numerous, and immersed in various avocations, yet they are hardly ever deficient in point of punctuality. On the subject of exactness in this respect, see the *Almanac des Gourmands*, 1re. Ann. p. 112-274.

‡ Essay on Drunkenness, p. 166.

When men are trained to athletic exercises, they are directed not to take their liquor in great draughts, but by mouthfuls at a time, by which the quantity will quench the thirst better than if taken at once. It is probable, by following this rule, that they are enabled to do with a very small proportion of liquid food.

It is a question, whether it is better to take one or two kinds of liquor, or a variety. In England, excepting in very opulent families, you will seldom meet with above two or three kinds of wine, unless when a great entertainment is given; whereas in France, there is great variety, having different and peculiar flavours, more or less acceptable to the stomach, at particular times, and with various aliments †. Unless where this system, however, is perfectly understood, a variety of liquors ought to be avoided.

It is much disputed, whether drink ought principally to be taken with solid food, or after it; the French adopting the one practice, and the English and Germans the other. Of the two, the French mode is certainly preferable, for it is very difficult, unless where regularity is punctually enforced, to rise from table, after having seriously sat down to the bottle alone. The best rule is, to give up drinking with the desert.

The

---

* See the Edinburgh Medical and Surgical Journal for 1805, p. 78.

† Pinkerton's Recollections of Paris, Vol. II. p. 205, where there is also a list of the various wines commonly used in France. It is observed, p. 98, that the wine called *chablis*, is particularly well calculated to accompany oysters.

The idea of quitting table with the desert, is objected to in England, from the supposed impossibility of spending the evening with any degree of pleasure or comfort, except in the company of persons, whose conversation is enlivened by a cheerful glass. But this observation is only applicable to those, who have no resources in their own mind, no domestic society to associate with, no books they can take a pleasure in perusing, or no business with which they can be occupied. Besides, in large towns, there are generally public amusements, to which they can resort, for wasting that time that may hang heavy upon their hands *.

3. It is much contraverted, whether liquids should be taken warm, or cold, or even iced, where that luxury can be obtained. It is a good general rule, to take them rather warm in cold weather, and either cold or iced in warm; but that system must be varied according to circumstances, and ought not to be carried to extremes.

It is well known, that the Chinese take all their liquids warm, grounding it on this idea, that, as the fluids of the body are warm, so should the liquids thrown into the stomach †. But, in this case, various particulars ought

---

* An ingenious author has remarked, that nothing is more desirable than to establish a plan of social intercourse, independent of the pleasures of the bottle. The meetings should be made more promiscuous, than our usual parties, by the introduction of boys and girls, at the age when they begin to use their reason, a plan that cannot be at present attempted, as it leads young people to the habit of drinking some glasses of wine daily, at too early a period of their life. Beddoes's Hygëia, Vol. II. Essay VIII. p. 40.

† Dolæus, in his Essay on the Gout, remarks, that he knew a gouty gentleman, who drank warm beer with great success for the gout; and the Chinese, who drink their water warm, are not subject to this distemper.

to be taken into consideration. Broths, and soups, and liquids mixed with nourishing substances, ought certainly to be taken warm; but, in regard to those liquids which are taken at meals, merely as diluents to our daily food, the cooler they are, the better for the purpose of strengthening the stomach, and assisting digestion. If any liquid, however, is taken *between meals*, when the body is heated, with the view of quenching thirst, the liquor must either be warmed, or mixed with wine or spirits, otherwise the most fatal consequences may ensue.

Taking liquids warm, promotes chylification, circulation, and, what is highly beneficial to the economy, perspiration. Thus, as a spur to the animal function, it may supply the place of condiments, and consequently, must have many great and beneficial consequences. But a hot diet greatly relaxes the tone of the whole system; and though it may assist a depraved appetite, and promote perspirability, yet it is an enemy to robustness and vigour *.

But, if it were admitted that liquids should be taken warm, yet nothing can be more pernicious, than the practice of taking them very hot. It spoils the teeth,—brings on the tooth-ach,—weakens the head and eyes, ruins the stomach,—and is attended with a variety of other mischievous effects.

The Asiatics, the Greeks, and Romans, usually drank their liquors cold, and they were taken warm only occasionally, and chiefly by valetudinarians, when it was enjoined by their physicians as a necessary part of their regimen. Seneca represents the drinking of wine diluted and warmed, as proper for a valetudinarian, but intolerable to the delicate and luxurious. Hippocrates enumerates the various bad effects arising from the continued abuse of warm diluting liquors; and the Rhodians, we are told, were remarkable for their pale and effeminate complexions, which they acquired from the excessive use of warm water*. The health of the Emperors AUGUSTUS and CLAUDIUS, enervated by the warm regimen, was restored by drinking their wine cold†.

---

* Falk's Guardian of Health, Vol. I. p. 153.—Camper, on the other hand, remarks, that a great quantity of tepid, or warm liquor, must do more harm than the ingredients can do good. It weakens the stomach, and injures the concoction of the food.

Not only did the ancients prefer their liquids cold, but also were accustomed to take them after being immersed in snow, in which practice they have been imitated by some of the moderns‡. It appears, indeed, from repeated experience, that iced liquors are not only grateful and salutary in hot climates, but are often necessary to preserve health, by restraining and moderating profuse sweats, (which deprive the blood of its finer parts), and to make the other discharges and secretions more regular. Such liquors, however, are particularly dangerous to persons who have been previously heated by exercise, and are improper in advanced age, or in the colder seasons of the year§.

4. The next point to be considered is, what diluent is best calculated for digestion? That is a point difficult to ascertain, as any experiment out of the body, can give us but little information regarding the processes which take

---

* It is singular, that the same remark may be made of the Chinese.

† Barry on the Wines of the Ancients, p. 154, 155.—The ancients were of opinion, that heated wine inebriated much sooner than cold wine.

‡ Some also cool their wines by evaporation, a modern practice, derived from the East Indies.

§ Barry on the Wines of the Ancients, p. 172.—Ramazzini strongly inculcates the same doctrine.

place in the living stomach. The following experiment, however, may be worth recording:—The same quantity, of the same sort of meat, was put into four distinct glazed vessels, with a like quantity of *water* in the one, *malt ale* in another, *white wine* in a third, and *claret* in a fourth; and after some hours of cold maceration, and frequent stirring of each alike, the water and ale mixtures were the most changed, being somewhat softened, and as it were mucilaginous, (if either had the advantage, it was the malt ale), the white wine was less changed than both, and the other with claret, was scarcely changed at all, unless to a greater hardness. The vessels, being afterwards closely covered, were put on a gentle fire, and kept, as nearly as possible, in the same degree of warmth for several hours. The greatest advances towards a dissolution were still made in the two first, the third much short, and the fourth still less *. This experiment, so far as it goes, is certainly in favour of malt liquors and water, in preference to wine, and of white wines over the red.

5. The following miscellaneous observations are connected with rules for drinking.

It is a necessary rule to observe, that when persons are young and healthy, their drink should be water, or weak fermented liquors, but that the strength of their drink should increase as they advance in years.

Another rule to be observed is, that liquors, some degrees stronger, may be allowed in the winter, than in the summer; to keep up, and to strengthen the tone of the solids and vessels, under an increased quantity of their contained fluids, in consequence of diminished perspiration †.

---

* See Curteis's Essay on the Preservation of Health, p. 81.

† Those who use too much strong stomachic wines, however, to prevent wind, are seldom free from it, nor from all the other disorders of indigestion.

Cadogan affirms, that whatever the advocates for a little wine every day, may argue in its favour, they are most undoubtedly in a very great error; and that it would be much better, and safer, to drink a bottle, and get a little merry, once a week, and to drink water only, or small beer, at all other times; for, in the interval, nature might totally subdue the wine, and recover entirely from its effects *. A respectable physician, however, (Dr Falconer), condemns this doctrine, as not likely to be of service to the cause of temperance. The habitual use of stimulants, he admits, is improper, and their effects wear out by custom; but he contends, that wine, moderately taken, is most necessary as an antiseptic, to qualify the putrefactive tendency which a large quantity of animal food is apt to induce. He therefore recommends, in preference, the directions of Celsus, who advises a person in health to confine himself to no fixed rules; to avoid no kind of food commonly used; sometimes to be in company, and sometimes to estrange himself from it; sometimes to exceed a little in diet, and at others to live regularly †.

It is a custom, which almost universally prevails in the northern parts of Europe, to present a dram, or glass of *liqueur*, before sitting down to dinner. It answers the double purpose of a whet to the appetite, and an announcement that dinner is on the point of being served up. As the practice has continued so long, most probably it has been found to answer the first of these objects, or at least to do no harm; and the other has the convenience attached to it, of letting those of the company engaged at cards or

---

* Cadogan's Dissertation on the Gout, 6th ed. p. 61.

† Falconer's Observations on Cadogan's Dissertation on the Gout, p. 80.

or billiards know, that they should stop without beginning a new game or party. Along with the dram, is presented on a waiter, little square pieces of cheese, slices of cold tongue, and dried toast, accompanied with fresh caviar, &c.

The celebrated Cullen, when far advanced in life, found a similar stimulus necessary. After his dinner, which consisted chiefly of broths and fish, (as he could not eat animal food from the want of teeth), he drank a pint of port daily, and concluded with a wine glass filled with white sugar, and as much rum as it could hold; so that he had fully half a glass of spirit. The same dose was taken every morning about twelve o'clock; and if visiting at that hour, he was accustomed to call for it, as regularly as when he was at home. It was never understood that his health suffered from that practice. Taking a small quantity of spirits in this way, as a cordial, and a medicine, may be of use to old men, but it can never be necessary in youth, unless where persons gormandize more, or give greater latitude to their appetites, than they ought to do.

CONCLUSION.

It may be proper to conclude this chapter with some observations on drinking to excess.

A French author has written an eulogium on drunkenness, in which he contends, that we ought to enjoy ourselves;—that wine excites joy;—that it is good for the health to be sometimes intoxicated, particularly for the old;—that wine gives spirit;—that it renders a man eloquent;—that it is the means of acquiring friends, and reconciling enemies;—that the custom of being intoxicated is extremely ancient,—and, that it is justified by the example of popes, philosophers, poets, men of letters, warriors, and statesmen. After going through these, and other topics, he concludes with the rules which ought to be observed in regard to drinking, of which the following is the substance.

1. The first and principal is, not to be intoxicated often; for which the authority of Seneca is quoted. 2. The second is, to give way to that custom only in good company, that is to say, with one's friends, and with persons of merit. 3. The third rule is, to drink nothing but the best wine, having five properties,—a good taste,—a good flavour,—a clear colour,—age,—fame, or the credit of coming from a country celebrated for its produce. 4. Drinking should only be indulged in at convenient times. 5. No person should be forced to drink, a species of compulsion which, in some countries, has been prohibited by special law. 6. But the last rule is best, *not to push intoxication too far* [*].

It is impossible, however, to justify intoxication, however ingenious the arguments that may be urged in its behalf; and even under the restrictions contained in these rules. The author of this work cannot speak from experience, of the destructive consequences of drunkenness, never having been himself intoxicated; but from all that he has read, and all that he has seen, he considers it to be a most detestable practice, and the inlet to every vice; and that excess in drinking, is the principal source of many of the most fatal disorders with which the human frame is afflicted [†].

---

[*] See L'Eloge de l'Yvresse, one Vol. 8vo. printed at Leyden, *anno* 1715. The rules in French are as follow:—' Regles qu'on doit garder en s'enyvrant. 1. Pas souvent. 2. En bonne compagnie. 3. Avec de bon vin. 4. En tems convenable. 5. Ne forcer personne à boire. 6. Ne pousser pas l'yvresse trop loin.'

[†] We are told by M. Muret, that he had the curiosity to examine the register of deaths in one town, and to mark those whose deaths might be imputed

It has been remarked, that vice is more ingenious than virtue, and has numerous stratagems, by which she attacks, and too often vanquishes her simplicity. Among these, the custom of pledging during meals, and drinking toasts afterwards, are certainly the most dangerous; being customs, which seem to promote social intercourse, and are accounted marks of friendship. The inventor of toasts, in particular, may justly claim a nich by the side of any hero whoever deluged the world with slaughter; and if the pestilence had been a human invention, he might certainly be stationed by the side of its great founder *.

Formerly, indeed, not only stratagems were used, but even compulsion. It was not uncommon to have a large goblet, called a *Constable*, placed upon the table, *in terrorem*, which he who flinched from his glass was *obliged* to drink, however unequal to the task. So that sooner or later intoxication was unavoidable †. But the case is now greatly altered, even in countries, of old the most addicted to intemperance †.

Drunkenness

---

imputed to drunkenness; and he found the number so great, as to incline him to believe, that hard drinking kills more of mankind, than pleurisies and fevers, and all the most malignant distempers. Price on Reversionary Payments, Vol. II. p. 250.

* Pinkerton's Recollections of Paris, Vol. II. p. 349.—Regarding toasts, Camden in his Annals, under the year 1581, has the following remarkable observation. "The English, who hitherto had, of all the northern nations, shewn themselves least addicted to immoderate drinking, and were commended for their sobriety, first learned, in these wars in the Netherlands, to swallow large quantities of intoxicating liquors, and to destroy their own health, by drinking that of others." I am much afraid that some later wars in the same countries, have not greatly encouraged sobriety. The Roman armies were allowed only vinegar and water in all their expeditions; yet, with this simple beverage, they conquered the world. Trotter's Essay on Drunkenness, p. 140.

‡ See Watkinson's Philosophical Survey of Ireland, p. 40, 41. The

constable

Drunkenness prevails more in cold climates than in warm; physical causes may, in a great measure, explain this circumstance. Heat is one of the great supports of animal life; it bestows on the mental faculties cheerfulness and vivacity; and the inhabitants of hot countries are observed to be more gay and volatile, than those of the northern regions. As heat supplies abundant stimulus, the constitution, therefore, needs less excitement from diet. But the shivering native of Lapland or Labrador, whose temperature of climate, for a great part of the year, descends beneath the freezing point, feels an unusual glow and animation from a spiritous potation, which he cannot obtain from his wintery skies. His atmosphere thus conspires to make him a drunkard, because, when he first tastes a beverage that imparts cheerfulness and strength, he is not aware, that it is the first step to a course of indulgence that must ultimately impair his health, and abridge his understanding. Dr Falconer, in his essay on climate, says, "If we go from the equator to the north pole, we shall find this vice increasing together with the degree of latitude. If we go from the equator to the south pole, we shall find drunkenness travelling south, exactly in the same proportion to the decrease of heat*."

Some

---

constable was formerly usual in other countries besides Ireland, though it is said to have originated in that hospitable country. There was formerly a most detestable custom at Edinburgh, of *saving* ladies, as it was called, on St Cecilia's day, or striving who would drink the greatest quantity of wine to the health of different beauties; and she, to whose health the greatest quantity was drank, was "*the belle*" of the season.

Some require no compulsion, and are hardly ever intoxicated, but are, what Trotter calls *sober drunkards*, drinking a great quantity every day, but never to the pitch of intoxication.

* Trotter's Essay on Drunkenness, p. 138.

Some intemperate men, it has been remarked, have lived to a great age. That some drunkards have numbered eighty years and upwards, there can be no doubt.—But what kind of life has that been? Half the time must have been spent under the impression of deranged intellect; and their sober moments, if they had any, must have been a continued repetition of mental disquietude, dejected spirits, and gloomy apprehensions. If, however, we admit, that one drunkard now and then may exceed three-score years and ten, the balance is much on the other side, since many thousands fall victims to the bottle before they arrive at thirty.

There are many aware of the consequences resulting from it, who would give up drinking to excess, if they knew how the custom could be renounced. It is a question, however, respecting which many able physicians differ, whether it is most advisable to abandon the custom at once, or gradually. Much must certainly depend upon the temper and constitution of the patient. Doctor Trotter gives it as his opinion, (and no man has had more experience in that line), that with drunkards, wine, malt liquor, and spirits, in every form, ought at once to be taken from them *. Whereas, Doctor Garnett, on the other hand,

approves

---

* Trotter's Essay on Drunkenness, p. 179.—" I conceive the frame of the habitual drunkard to have been so much exhausted by inordinate and unnatural stimuli, that it has been long my practice to commit him to the regimen of children, such as a diet of milk, and other kinds of nourishment of the mildest quality. In short, instead of withdrawing the bottle by those slow degrees which have been long recommended by physicians, my plan of *cure* is, at once to take from him every thing that is highly stimulating; to put him on food in direct opposition to his former modes of living, and consign him to the lap of nature, as if his existence were to pass through a second infancy. Indeed, the reformed drunkard must be considered as a regenerated being."—Trotter's Essay on Drunkenness, p. 185.

approves of the system of gradually diminishing the quantity, until the patient is cured *.

It may be proper to add, that, for the torturing sickness and lassitude succeeding to the debauch, or intoxication of the preceding day, nothing is more dangerous than to fly to a repetition for relief †. What is less hurtful, and has been found most successful, is a moderate dose of laudanum, or, in case the stomach cannot receive, or retain it, of opium, ordered, for the sake of accuracy, from the apothecary, and succeeded, as soon as possible, by some restorative soup.

To conclude, it can hardly be doubted, that as, on the one hand, moderation in the use of liquid food, is essential for the preservation of health and strength, and the attainment of longevity; so, on the other hand, intemperance, in that respect, lays a foundation for many of the most fatal disorders with which the human frame can possibly be afflicted ‡.

---

* Garnett's Lectures on Zoonomia, p. 248.

† Those patients who give up fermented beverage, may receive benefit from vitriolic, nitrous, or marine acids, mixed with water and sugar, so as to suit the palate, and not strong enough to set the teeth on edge. Even the mineral lemonade may be made use of by the sufferer from indigestion. Beddoes's Hygëia, Vol. II. p. 53.

‡ Trotter's Essay, Medical, Philosophical, and Chemical, on Drunkenness, and its Effects on the Human Body, (one vol. octavo, printed at London, anno 1804), is the best distinct work that has been written on this subject. There is a good section on drunkenness in Darwin's Zoonomia, Vol. I. p. 240; and some valuable hints regarding it in Pinkerton's Recollections of Paris, Vol. II. p. 338. Dr Willan, also, in his Reports on the Diseases of London, gives a very satisfactory explanation of the dreadful effects of dram drinking, with directions to those who are desirous of returning to sobriety and health, an extract of which was printed and circulated, at the expence of the Society for Bettering the Condition of the Poor.

CHAP. III.

OF SOLID FOOD.

To attempt any detailed explanation, of the vast variety of particulars, connected with the subject of *solid food*, which have occupied the attention of mankind for so many ages, and on which, not only volumes, but, were they to be accumulated, *even libraries* have been written *, would far exceed the limits by which our present inquiries must be bounded. We shall proceed, however, briefly to consider,

1.

---

* Justly has the poet of health observed, (Book II. line 96.)

'I could relate, the various powers
Of various foods, but fifty years would roll,
And fifty more, before the tale were done.'—ARMSTRONG.

It may be proper to observe, that the subject of *solid food*, has been more thoroughly investigated, than any branch of the present inquiry; and that the author could only attempt, in this chapter, to make a new, and he hopes a more distinct and satisfactory arrangement, than has hitherto appeared, of the observations of preceding writers. He has consulted a great

1. The uses of solid food, and the necessity thereof. 2. The nature and quality of the different sorts of solid food. 3. The means of preserving them till they are consumed. 4. The cookery, or the mode of preparing them for consumption. 5. The seasoning, or condiments with which they are usually accompanied. 6. The times of eating, and the sort of food best adapted for each meal. 7. The quantity that ought to be taken at the different meals; and, *lastly*, Miscellaneous rules, as connected with climate, and the seasons, and adapted to infancy, childhood, youth, manhood, sickness, and old age.

SECT. I.

Of the uses of Solid Food, including some Observations on Regimen in general.

THE solid nourishment we take, may answer four different purposes, 1. It may promote the growth of the body, and may enable it to attain that size and bulk to which it is by nature destined. 2. It may repair the waste which the body is constantly sustaining, both in its growing, and in its more permanent state. 3. It may prevent, alleviate, or cure the disorders to which the body is liable; and, 4. It may restore the strength which may have been wasted by disease, and may tend to prevent its recurrence.

1.

---

great variety of them, but he is principally indebted to Cullen's most valuable Lectures on the Materia Medica; Martyn's Miller's Gardener's Dictionary; the Practical Synopsis of the Materia Alimentaria; a tract, entitled an Easy Way to prolong Long Life; and other works, which will be specifically quoted.

1. It is evident that neither plants nor animals could increase in size or bulk, without the accession of fresh substances, calculated for that purpose. Without such accessions, the slender twig would never become a tree, nor the helpless infant a man. Even the growth of trees is a circumstance, at the first glance, not easily to be comprehended. Attached to the soil, and unable to wander from the spot where they grow, they can only absorb, by their roots, the nutritious particles of fluids that moisten the earth, or, by their leaves, the nourishing substances that float in the atmosphere. The growth of animals, in general is, however, still more extraordinary. But, above all, nothing but reiterated experience could convince us, that it was possible by any art, or in any given period of time, to transform a new-born infant, unable to walk, to speak, to feed itself, void of reason, almost without feeling or ideas, and who, without the care and protection of others, could not exist for many hours, nor sometimes for many moments, into the active, the intelligent, and the superior being which a man becomes when he reaches maturity; yet, without constant supplies of food, to be assimilated in the manner that will afterwards be explained, to the nature of the human frame *, that growth could never take place, nor could that maturity be attained.

2. It is now indisputably ascertained, that men, as well as other animals, constantly expend some part of their fluids or their solids, or both, when they are exerting any action, or performing any function of life †, and that no part of the body, however solid, has any constant duration

---

* See Chapter IV.

† Fordyce on the Digestion of Food, p. 1.

tion, but that it successively perishes, and is restored. It has been found, indeed, by repeated observations, that all the hair on the body is repeatedly renewed, the nails every two months, and that a thigh bone, if broken, and perfectly set, will acquire its former solidity in the space of sixty days. To repair the losses thus sustained, and to preserve the body, notwithstanding the alterations to which it is thus constantly subjected, it is necessary to furnish the system *with food*, or, in other words, with materials for supplying this perpetual renovation; on the due performance of which, the health, and the very existence of the human frame, for any length of time, must depend. Indeed, a regular supply of aliment is essential for that purpose, for, with the same blood, we could not live in health and spirits for two days. There must be a new, and daily supply, of that ethereal part of our food, to support our mental as well as our bodily functions *.

3. Notwithstanding every possible care to supply the system with wholesome and nutritious substances, (where no care is taken, the case must be greatly aggravated), the human frame is of so delicate a texture, that it must often be subjected to various disorders, which, in many instances, can be either entirely prevented, or much more effectually removed by a judicious regimen, than by the administration of medicine. In regard to this important branch of physic, we are far inferior to the ancients. Hippocrates hardly describes a disease, without recommending a regimen of life adapted to its cure; and, in this respect, his example is followed by Galen and Celsus. Aretæus, who is reckoned the most judicious of ancient writers, has declared, that not only in chronical, but in acute disorders, the whole

---

* See Cadogan on the Gout, p. 39.

of the cure depends on the regulation of the diet and way of life. The inattention, therefore, which moderns have in general paid to this subject, is highly reprehensible *.

4. When diseases are cured by medicine, and not by diet, they often leave the body in a weak and emaciated state. Among the means by which the strength which is thus exhausted can be restored, there is none more likely both to secure the renovation of health, and to prevent the recurrence of disease, than to follow a judicious system of diet, accommodated to the circumstances of the case, the age and constitution of the patient, and the nature of the malady from which he hath recovered. Indeed, so powerful are the effects of regimen in the restoration of health, that by means of it the whole juices of the body can be altered, and the recurrence of the most dangerous disorders, as the gout, the scurvy, consumption, &c. can in a great measure be prevented †.

This

---

* See Dr Falconer's Observations on some of the Articles of Diet and Regimen, &c. p. 2, 3, &c. This judicious physician sanctions these observations, by the authority of Huxham in his Essay on Fevers. He also remarks, p. 5, that a circumstance, seemingly trivial, has caused this part of medicine to be less considered than it ought to be, namely, that the directions for the medicines alone are accustomed to be given in writing, whereas those which regard diet and regimen are generally, in cases which require medical attendance, only delivered verbally. This has, in some measure, caused them to be less attended to, and even held as inferior, in their nature and consequence, to those which concern the apothecary.

† In some cases, the return of disorders, even of a paralytic or apoplectic tendency, have been prevented by regimen. See Robinson's Dissertation on the Food and Discharges of Human Bodies, p. 35, 61, and 62, where he describes the regimen by which he in a great degree recovered, at the age of 64, from a paralytic weakness, and other slighter disorders; and was enabled to write an interesting treatise afterwards, on the subject of health.

This naturally leads us to consider the nature and qualities of the different kinds of food, by means of which such important consequences can be effected. And here a subject presents itself of infinite extent and importance. For though food is not so immediately necessary as air, for the existence of human beings, yet such are the various properties and effects of the different sorts of aliment on the human frame, and so great the variety, as produced by nature, or improved by art, that a choice, owing to the contending advantages possessed by different articles, must often be difficult.

Some would put an end to all such questions, by our universally resorting to the simple diet, and strict regimen, of Wood the miller of Essex *, or of Cornaro. These, and other abstemious people, who, having experienced the greatest extremities of bad health, were driven to temperance as their last resource, may run out in praises of a simple diet, but the probability is, that nothing but the dread of former sufferings, could have given them resolution to persevere in so strict a course of abstinence, which persons who are in health, and have no such apprehension, could not be induced to undertake, or, if they did, would not long continue. *It will be much more beneficial to mankind, therefore, to show, how a pleasant and varied diet, is equally consistent with good health, and to point out the particular substances best calcu-*

---

* It appears, from the account given by Sir George Baker, in the Medical Transactions of the College of Physicians in London, of Wood the miller of Billiricay, in Essex, that the miller's diet consisted of a simple pudding, made by boiling coarse flour in water, without salt. Of this he consumed about three pounds in twenty-four hours, and took no fluid whatever, not even water. By this means, he reduced a degree of corpulency, such as to render life a burden, to a moderate bulk, accompanied with the return of health and strength.

lated for that purpose *. That is the real object of the following observations.

SECT. II.

Of the Nature and Quality of the different sorts of Solid Food.

SOLID food is derived, either from the animal or the vegetable kingdom †. Many of the articles contained in each are radically the same; but the difference, both in point of appearance, and in regard to the proportions they have of the same substances, is very great. The substances contained in each, even in the present imperfect state of chemistry, are numerous. It is calculated that the ingredients of plants are twenty-six, and of animal substances fourteen, and yet thousands of articles remain unanalysed ‡.

---

* See the Works of William Stark, M. D. p. 89. This ingenious author also observes, that, in all cases, great allowance must be made for the weakness of human nature; that the desires and appetites of mankind must, to a certain degree, be gratified, and that the man that wishes to be the most useful, will imitate the indulgent parent, who, whilst he endeavours to promote the true interests of his children, allows them the full enjoyment of all those innocent pleasures in which they take delight. If it could possibly be pointed out to mankind, that some articles used as food were hurtful, whilst others, in their nature, were innocent, and that the latter were numerous, various, and pleasant, they might, perhaps, from a regard to their health, be induced to forego those which were hurtful, and confine themselves to those which were innocent. But that is the utmost extent of forbearance that can well be expected.

† Salt is derived from the mineral kingdom, but is used, not as food, but as seasoning or condiment.

‡ See Thomson's System of Chemistry, Vol. IV. p. 206, and 474. No wonder that chemistry should still be considered in an imperfect state, when this intelligent author observes, "*that the task of analyzing all animal bodies is so immense, that it must be the work of* AGES OF INDEFATIGABLE INDUSTRY." Ib. p. 473.

But both vegetable and animal substances are *principally* resolvable into starch, sugar, mucilage or jelly, oil or fat, and gluten; and, as the most animalyzed of these principles are more abundant, and better elaborated in quadrupeds, and other orders of the animal kingdom, than in plants; hence, in equal quantities, animal, is more nourishing than vegetable food *.

As fruits, however, were the first article on which men subsisted, and as by far the greatest proportion of human beings live upon the productions of the soil, we shall begin with considering the different sorts of solid food produced by the vegetable kingdom †.

VEGETABLE ALIMENT.

VEGETABLE aliment may be properly divided into ten classes. 1. Fruits. 2. Nuts. 3. Pulses. 4. Grains. 5. Roots. 6. Sallads. 7. Pot-herbs. 8. The mushroom tribe. 9. Marine plants; and, 10. Miscellaneous articles.

1. *Fruit.*—The natural productions of trees and plants, were the first substances to which men would direct their attention, with a view to aliment, though fruits have now, in general, become rather an article of luxury, than of solid diet.

---

* See Practical Synopsis of the Materia Alimentaria, p. 1. and 2.

† It may be proper to explain some technical terms unavoidably made use of in this chapter.

Acescent——sourish.
Acerb——harshly sour.
Alkalescent——tending towards putrefaction.
Condiment——seasoning; a pickle, or preserve.
Empyreumatic——having the smell that proceeds from burnt oils.
Esculent——nourishing.
Flatulent——windy.
Mucilaginous——gummy.
Narcotic——sedative, or lulling sensibility.
Viscid——glutinous, or slimy.

diet. They may be arranged under five classes: 1. Stone Fruits. 2. The apple species. 3. Small seeded kinds. 4. Berries; and, 5. Farinaceous fruits. It is not proposed to enter minutely into these articles, but merely to give a general view of each particular.

1. Stone fruits*, in general, are of a soft lax texture, and their juices dilute, by which means, they are easily dissolved in the stomach; but being more liable to fermentation than any other, and producing a copious acid, they are apt to irritate the intestines, and to bring on vomiting and purging. Of these the peach is the most delicious, and though not very nourishing, yet is rather serviceable in obstructions and bilious disorders. Apricots, when thoroughly ripe, are nourishing, and more wholesome than the peach, and still more so than the cherry or the plumb. Cherries are palatable, and are recommended in the scurvy and in putrid fevers; but ought not to be taken in too great quantities. Tamarinds, a fruit difficult to classify, are more frequently employed for medicinal purposes than as an article of diet. Plumbs are of various sorts, differing in colour, form, size, and taste; but on the whole, unless when perfectly ripe, they are a dangerous fruit, though when properly dried, (when they obtain the name of *prune*), they are laxative, and consequently of use in costive habits.

2. The apple species is, on the whole, a more valuable and useful article, than what is known under the name of stone fruits. It is incredible the great varieties of this species, which by art may be still more extended. Of the real apple there are two great divisions, the sour and the

---

* Stone fruits possess something peculiar in their nature, which render them not so salutary for the stomach: and with the smaller sorts there is a risk of swallowing the stones, from which the most fatal effects have arisen. Turnbull's Medical Works, p. 82.

sweet, both of which are very palatable, and sufficiently salutary. The pear is still more wholesome, when it is thoroughly ripe, and does not disagree with the stomach. In their crude state, both pears and apples produce flatulence and acidity, which inconveniences are prevented by having them either baked or boiled. Medlars, quinces, and pomegranates, are not much known in this country. Figs furnish a wholesome food, both crude, and in a preserved state. They were said to have been the first aliment, of agreeable taste, used by the natives of Greece [*]. The orange [†], is certainly a delicious fruit, exceedingly pleasant and cooling, powerfully antiscorbutic, and highly useful in fevers, especially those of a bilious or putrescent tendency; but, on account of its acidity, it is liable to all the inconveniences that attend the use of stone fruit. Lemons and limes are principally useful, as a good corrector, and agreeable sauce, for many kinds of animal food, especially fish; and their juices, diluted with water, and sweetened with sugar, are employed to allay thirst,—in fevers to correct putrescency,—as an antidote to the scurvy,—and for other medicinal purposes [‡]. The pine apple, on account of its grateful taste and fragrant odour, is called the *king of fruits*,

but

---

[*] Athen. L. III. c. 2. p. 74.

[†] Oranges are known under the name of the China orange and the Seville. The juice of the first is sweet, and subacid. That of the Seville orange is sour, and somewhat bitter. Though less palatable, it is more stomachic. The observations in the text are only applicable to the China orange. Lemons and oranges, and other fruits, containing a great quantity of native vegetable acid, afford but little nourishment; but they are useful, as correcting the bad properties of other food.

[‡] The acid of lemons, and other fruits of the same sort, is known under the name *citric acid*, which forms the proper specific for the scurvy, and is also the best corrector of vegetable and narcotic poisons. Turnbull's Medical Works, p. 85.

but should not be taken in great quantities, being so apt to disagree with many people, particularly the aged.

3. The small seeded sorts of fruit are by far the most wholesome and valuable. Of these the grape ought, in the first place, to be mentioned, not only on account of the valuable liquor which it produces, but also as the fruit itself is so wholesome. The grape, when fully ripe, is cooling, antiseptic, and nutritious; and in the wine countries is much used at breakfast. Currants, a smaller sort of grape, though inferior in some respects to the produce of the real vine, yet can be eaten with advantage in a raw state, and forms many valuable articles by different preparations of cookery. The same observation is applicable to gooseberries, (which should be eaten without the husks), raspberries, and mulberries. In regard to strawberries, it is impossible to say too much in favour of that fragrant, cooling, and wholesome article. There are various modes of eating them, but with milk or cream, is generally accounted the most agreeable, and is found to lessen, in the stomach, the activity of the acid they contain *.

4. The fruits to be classed under the head of small berries, are the cranberry, the bilberry, and the red whortleberry. Of these the cranberry is the one principally in use; and, when baked with a proper quantity of sugar, it makes a tart that is generally relished.

5. The farinaceous fruits are not considered to be of a wholesome quality. The melon, which is the principal, is said to be an article of great consumption in some parts of Asia,

---

* Strawberries are very wholesome. They tend to promote all the evacuations, and are laxative without inducing any apparently weakening efforts: they are also supposed to possess qualities unfavourable to stony concretions. The wild strawberry has the most agreeable flavour, and is perhaps the best of the whole species.

Asia, particularly in Persia, but it is not so generally made use of in Europe; and the plan of eating it, adopted in France, namely, with roasted meat, is much better than the mode usual in England, that of mixing it with other fruits after dinner, when it disagrees with many stomachs. The cucumber is not a general favourite, and could hardly be consumed at all in a raw state, without the oil and vinegar with which it is accompanied*; it makes, however, a useful addition to various sorts of broth. The gourd, and the pompion, are not much known, or approved of in England.

In regard to fruits, in general, the following observations may be made.

Fruits are, for the most part, the production of summer, and they are composed of those principles which are best adapted to allay that excessive heat, and increase of circulation, which our body feels at that period†.

Fruits have two bad qualities, the first, excess of acid; the second, a tendency to fermentation.

Unripe fruits possess more of the acid principle‡; fruits, when ripe, abound more in saccharine matter, and may be more safely used.

The more juicy the fruit is, the more fermentable it will be upon the stomach, and the more apt to generate flatulence,

---

* The cucumber is so hard of digestion, that there are instances of their being brought off the stomach forty-eight hours after they have been eaten.

† Turnbull's Medical Works, p. 79.

‡ Fruits in their unripe state are what are called *acerb*, or harshly sour, owing to the predominance of the acid over the sugar and oil; which, in this state, are in a very small proportion to the acid. Hence unripe fruits produce very disagreeable feelings in the stomach and bowels; especially when they are weak. *Cornaro* could not use fruits without being disturbed by them.

lence, and the other symptoms connected with it. The drier, therefore, that any particular fruit is, either by nature, or prepared by art, the safer it is for the stomach.

Fruits when boiled, are less flatulent than in their natural state. The addition of spices or sugar checks their flatulent tendency, and corrects their acidity. Their junction with ardent spirits, as a little rum or brandy, destroys their disposition to ferment.

There are three modes of consuming fruits; in a raw state, or dried, or prepared by the arts of cookery.

In a raw state, they ought only to be eaten when thoroughly ripe; and if taken in moderation, in that state, they are of the highest utility. Indeed they are produced by nature at that season of the year, when such substances, with their cooling, refreshing, and diluting qualities, are peculiarly acceptable. In some countries, it is usual to breakfast upon fruit; and such a plan may be wholesome, in cases where the labour the individual has to undergo, does not require more nourishing diet. Others take their fruit before dinner, and this practice is supposed to be useful to those who are of a costive habit *. The use of fruit, however, *after meals*, is in general the safest, and most common practice; and where much animal food is consumed, fruit is certainly a proper addition to the repast. It may be laid down, as a general rule, to eat mild fruit before meals, and sour fruit after.

---

* Persons in health may eat fruit at any time. Young persons, full of blood, may be benefited by a moderate use of fruit an hour or two before dinner, as it may abate a keen appetite for the principal meal. Persons subject to little irregular fevers, will be benefited by eating fruit in the morning and evening. Persons subject to indigestion and acidity of the stomach, ought to eat their fruit rather after than before dinner. Adair's Medical Cautions, p. 211. To persons with weak digestion, the addition of a meal from the garden, to a meal, (probably too full a one), from the kitchen, is in the highest degree pernicious. Beddoes's Hygëia, Vol. II. Essay VIII. p. 64.

Dried fruits *, in particular grapes or raisins, plums or prunes, and figs †, are valuable articles of food, their watery and acid particles being thus in a great measure dissipated; this improves their qualities in various respects, and gives them a more concentrated form. Thus, by a simple process, the inhabitants of cold countries are enabled, through the medium of commerce, to enjoy the pleasure of consuming articles, which their climate has denied them.

Fruits are variously prepared for consumption, as by roasting, baking, boiling, stewing ‡, &c.; and wherever the

fruits

---

[*] Dried dates constitute the common food of a great part of Asia. They are produced by the palm tree, which is justly accounted one of the most curious of vegetable productions, being so extensively useful in life. The date is of different kinds; in their best state, they are a pure saccharine fruit, free from acidity, but with a considerable degree of acerbity.

[†] Dried figs are the most nourishing of the dried fruits, and were given to the athletæ as part of their food. The ancients appear to have derived a favourable opinion of the nutritious properties of figs, from observing, that the persons who were appointed to guard the fig-gardens and vineyards, when the fruit was nearly ripe, and who fed upon hardly any thing else for a month or six weeks, during that period, became remarkably fat. In France they are eaten with roasted meat. The dried fruits are less acescent and flatulent, but more nutritive than the green or fresh, but not so soluble in the stomach.

[‡] By applying heat to fruits, we change their qualities, dissipate their active acid, and dispose them less to ferment. Fruits thus prepared, are certainly safer than when they are fresh, or in a crude state, and sit more easy on the stomach. It is to destroy their tendency to fermentation, that we frequently eat them with milk or cream, whose oily nature produces that effect. Strong and mellow wine also, obviates the pernicious effects of bad fruit. Sugar renders fruit more nutritive, and is a judicious addition to sour fruits. Sometimes butter is used in apple pies, on account of its anti-fermentative quality; but in weak stomachs it is apt to produce heartburn. The cookery of vegetables not only renders them more soluble

fruits are pulled before they are ripe, this plan ought to be adopted, as the application of heat, and the addition of sugar, removes many objections to the use of this species of food, even to the most delicate stomachs.

2. *Nuts.*—In ancient times, nations were often distinguished according to the particular article on which they lived, hence the Arcadians were called *acorn-eaters:* and it is generally supposed, that substances of the nut species, were one of the first means of subsistence to which men applied. It is imagined, however, that the acorns, so often mentioned in ancient history and tradition, comprehended several other kinds of shell fruits, as chesnuts, walnuts, &c.*

The nut species still furnish, in some countries, a considerable source of food; but though, on the whole, they are nutritious, from the quantity of oil they contain, yet they are difficult to dissolve, owing to the viscidity of their farinaceous matter, and hence they require strong stomachs to digest them. In many cases they oppress the stomach some hours after they are used. They are best when eaten fresh, and their skin, which is very astringent and unwholesome, should be thrown away. They should be well masticated; and, if possible, sprinkled with salt, by which they are formed into a kind of soapy mass, and rendered miscible with the fluids. They ought to be eaten in very moderate quantities, as they are very apt to affect the stomach and

---

luble in the stomach, but also deprives them of a considerable quantity of air, the fruits especially; an apple contains a quantity of air, many times its own bulk. Adair's Medical Cautions, p. 274.

* Goguet's Origin of Laws, &c. Vol. I. p. 77. Potter, in his Antiquities, thinks otherwise. The acorn of the *quercus suber*, or the cork tree, is as good as the filbert; and, like them, sold in the markets of Spain.

and bowels, and to occasion difficult breathing and asthma.* The best form of using them is in puddings and emulsions, when their tenacity is in some measure broken by sugar. The chesnut has a good deal of sweetness, and somewhat of a saccharine nature; and when properly mollified, by roasting or boiling †, which destroys its viscidity, it becomes abundantly light and nutritive. Walnuts are palatable and nutritious, when eaten fresh, and deprived of their skins. The filbert, when taken in small quantities, is not considered to be unwholesome, but is dangerous if eaten in considerable quanties ‡. The sweet almond has a pleasant flavour §, and is exceedingly nutritious; but if kept, its oil becomes rancid, and it is difficult of digestion.—Orgeat, however, which is prepared from this article, is a pleasant and useful emulsion. Bitter almonds, when fresh, are a dangerous fruit, and poisonous to some animals; but when deprived of their acrimony, by heat, may be used with safety. Pistachia nuts, on the whole, are the wholesomest of the almond tribe. The oil of the cashew nut is highly acrimonious, and cannot be eaten with safety, until deprived of that oil by heat*. But of all this tribe, the chocolate nut (*Theobroma Cacao*), is the most valuable. The farinaceous part of this nut, prepared in the form of chocolate, is highly nutritious†.

---

* Hoffman observes, that dysenteric complaints are always most common in those years in which the harvest of nuts is plentiful; and this species of fruit is the most dangerous of any likely to fall in the way of the lower orders of the people, more especially in the country. When taken even in small quantities, they are found to oppress the breathing, and to produce vomiting and bowel complaints; but in large quantities, they have been often known to lodge in the stomach, and to be incapable of being removed from thence by any medicine, and, of consequence, have put a speedy end to life. Falconer's Essay on the Preservation of the Health of Persons employed in Agriculture, p. 13.

† In many parts of Italy, boiled chesnuts are used as a substitute for potatoes.

‡ It is their being eaten after meals, upon a full stomach, which makes them more unwholesome than they would be, if eaten at any other time. In that case, they frequently pass the bowels undigested.

§ The oil of almonds, when quite fresh, is said to help a costive habit of body, and is good for children's gripes.

3. *Pulses.*—Next to fruits, and the nut species, men would naturally apply to the pulse tribe for the means of subsistence, as it required little labour to procure it. Of these articles, peas is the most general. In a tender state they form a wholesome and light food; and even when brought to maturity, they are excellent for various culinary purposes; and are sometimes made into bread; but without a large admixture of wheat flour, it is hard, heavy, and unpalatable. Lentils are an inferior sort of pea. The bean is another species of pulse, much used in this country, but more frequently given to horses, than to the human species. Kidney beans, being eaten with their cod, are not so flatulent as other pulse. When well boiled, they are palatable; but not very nourishing.

The consumption of pulse, as human aliment, is greatly circumscribed. In their earlier state, or as green succulent food, they are generally acceptable; but when all their parts have come to maturity and perfection, they are only calculated for the hardy, robust farmer, or those who have strong digestive powers of stomach. It is fortunate, however, that they furnish, at the same time, excellent food for various descriptions of domestic animals; and thus the soil, which would be exhausted by perpetual crops of grain, is enabled to preserve, or to recover its fertility, under the less exhausting production of the various sorts of pulse *.

---

* Cashew nuts may be prepared as food, by blanching them with hot water to wash off the caustic oil, or roasting them in a pot like coffee, but care must be taken to avoid the smoke, which is very acrid. They may also be prepared by sticking them on a fork, and burning them at a candle. The oil of the shell is abundant, and thoroughly roasts the kernel within. The kernel of the fresh cashew nut, is made into an emulsion, like almonds, and universally used in the West Indies.

† The oil of the cocoa nut, in its separate state, is used as a cosmetic for rendering the skin smooth and even, and preventing wrinkles. It leaves no appearance of unctuosity behind it.

4. *Grains.*—When neither fruits, nor any of the pulse tribe could be obtained, men would naturally apply to grains for the means of subsistence: of these, the principal are, 1. Wheat. 2. Barley. 3. Oats. 4. Rye. 5. Rice; and, 6. Maize; to which some miscellaneous articles may be added.

1. Wheat is the most perfect of all grain, and the best calculated for making bread; and, it is said, next to rice, the most nutritive of farinaceous substances. It consists of three distinct parts, two of a vegetable nature, and one a sort of gluten, which possesses the properties of animal matter. 2. Barley. In many parts of Europe this grain is the principal article of subsistence; but the bread formed from it, though not unpleasant, yet is heavy, and not easily digested. When wheaten bread, therefore, can be obtained, barley is principally applied to the manufacture of liquors. Converted, however, into what is called pot, pearl, or Scotch barley, it is found of great use, as an ingredient in broth. 3. About fifty years ago, it was calculated, that nearly a fourth part of the inhabitants of Great Britain liv-

---

* In Edlin's Treatise on Bread-making, there are receipts for making peas bread, &c. which, as substitutes for wheaten bread, are well calculated for the active and laborious classes of the community.

ed upon oat-bread; but the introduction of greater wealth, and more luxury, has greatly diminished its consumption. It is supposed, that more nourishment may be obtained from this grain, than from the same quantity of barley or rye, but to wheat it is evidently inferior. 4. Rye is a very common grain in the northern parts of Europe; and, indeed, without winter rye, which is a hardy grain, and early ripe, the inhabitants of those countries could hardly exist. Bread made of rye, is of a dark brown colour, lies heavy on the stomach, but is found to be nutritious. 5. Rice is a valuable article, which probably furnishes subsistence to greater numbers of human beings, than all the other grains put together. It is remarkable for its mild and innocent qualities, sits easy on the stomach, and is well calculated for invalids. It may be used in various ways, namely, plainly boiled; or mixed with other articles, and converted into a pudding; or manufactured into bread; but, when the last mode is attempted, it must be mixed with a considerable proportion of wheaten flour. 6. Maize, or Indian corn, is the chief article of sustenance in North America, and some parts of the West Indies. It is also grown in the southern parts of Europe, where a number of preparations are made from its meal, as the Italian *polenta*, &c. Though a nourishing article, yet it does not make fermented bread in any respect comparable to wheat. 7. A variety of other articles may be comprehended under this general head, as buck-wheat, manna-grass *, the bread-fruit, the bread-nut, the plantain-fruit, &c.; but to enter into these peculiar articles, is beyond the limits by which the present work must be bounded.

---

* Manna-grass is a favourite seed of the Poles and Germans. It has a sweet agreeable taste; and, boiled in milk, is said to prove remarkably nutritive. It is used more for invalids, than as a common article of diet.—*Turnbull's Medical Works, p.* 71.

The manner of using these sorts of grain, as bread, will be the subject of future discussion. (*Sect.* 4.)

5. *Roots.*—When nothing calculated for subsistence was found above ground, it would be natural to apply to the roots of plants, as the means of procuring aliment; and various articles of that description are found to contain a large proportion of nourishing matter, though in that respect inferior to grain. Roots are divided into two sorts; 1. Those which are used as food; and, 2. Those which principally answer the purposes of condiment or seasoning.

1. The potatoe is the most valuable of all the articles of subsistence produced under the surface *. It affords a mild and wholesome nourishment; and next to the various sorts of grain, it is the most valuable of all vegetable productions. It would require a separate work to enumerate the great varieties of this sort, the advantages of each, the mode of cultivating them, the manner in which they ought to be preserved, and the various modes by which they are rendered fit for consumption. On account of the importance of this article, however, the best mode of preparing it, as a means of subsistence, will be afterwards explained. (*Sect.* 4.)

---

* The potatoe is the best substitute we possess for bread. It is properly a light alimentary substance, neither viscid nor flatulent, and having no tendency to acidity. It is questionable, however, whether it will support the laborious and active, in a state of health, without the aid of some other kind of aliment. It is true that the lower orders in Ireland, who live almost entirely on this article, with the addition of milk, are distinguished by their personal appearance; but they do not work so hard as the labourers in England, or even some parts of Scotland. During the late scarcities in Scotland, many labourers, who attempted to live on potatoes alone, were obliged to give them up, on account of the weakness they occasioned, at least they experienced weakness and faintness, which they said was removed, when they returned to other sorts of food, animal food in particular.

Turnips are a most excellent vegetable, and afford a light and wholesome nourishment *. It appears that the ancient Romans, in the best period of their republic, lived much upon this root. With many people they gently purge; hence they are good for those who are subject to be costive. It is principally cultivated, however, at present, for the use of animals rather than of men; is rather flatulent or windy; and, when raised to a great size, furnishes but a weak, or watery nourishment. The carrot is a more nourishing article; but to many persons it is found difficult to digest; being of a flatulent nature. It requires, on that account, much addition of condiment to render it wholesome. It ought to be eaten young, otherwise it lies heavy on the stomach, and is hard of digestion. It is a good ingredient in soups. To horses and cattle it is a most acceptable food. The parsnip, the beet, Jerusalem artichokes, &c. are not in such general use as to require any particular detail. Of these the parsnip is reckoned the most nourishing; it is likewise of easy digestion, and agreeable to the generality of palates, though some dislike it on account of its sweetness.

Esculent roots, however, are seldom used solely for food, the potatoe excepted; but are brought to our tables to add bulk to our dinner meal, in addition to bread; and to qualify our animal food, by lessening its alkalescency, and sti-

---

* There is a species of turnip which grows in North Britain, called the yellow turnip, which is sweet, and of a superior quality to those produced in the south, particularly about London, which are bitter and stringy. The yellow turnip is not only the most nourishing, but also the most hardy in sustaining the winter. It is eaten with milk, to cure the consumption and scurvy.—Buchan's Domestic Medicine, p. 641.

The Swedish turnip is also, in many respects, a most valuable article. But it is to be observed, in regard to turnips in general, that they disagree with those who have weak stomachs, and are subject to flatulences, like hysteric women, &c.

mulus [*]. The number of articles comprehended under this head, is very great: Mr Bryant of Norwich enumerates above forty, produced in this country [†].

2. There are various roots which are sometimes used as food, but are more generally employed as seasoning or condiment. Of these, the onion is much in use, and affords a large proportion of nourishment. It is supposed, indeed, that hardly any substance possesses it to a greater extent, in so small a compass [‡]. The *leek*, the *garlic*, the *shallot*, are of the same species, and possess qualities of a similar nature. They agree best with persons of a cold and phlegmatic habit, where the stomach is weak and relaxed, and where it requires the aid of a powerful stimulus to assist digestion. The horse-radish is a warm and pungent root, much used as condiment, more especially with roast beef, to the digestion of which it is supposed to contribute.

6. *Sallads*.—We are told, that the ancient Greeks, and other nations, ranged over the fields and woods in search of food, like animals, devouring any wild herb they could find, likely to satisfy their hunger [§]; and this is the less impro-

---

[*] Adair's Medical Cautions, p. 213.

[†] In tropical countries, yams, eddoes, and sweet cassada, boiled or roasted, are served up at dinner, and called bread-kind. They supersede the use of bread.

[‡] Onions never can be sufficiently recommended; they possess more nourishment than perhaps any other vegetable. It is a well known fact, that a Highlander, with a few raw onions in his pocket, and a crust of bread, or bit of cake, can work or travel to an almost incredible extent, for two or three days together, without any other sort of food whatever. The French are aware of this; the soup *à l'onion* is now universally in use after all late meetings and dances, &c. as the best of all restoratives.

[§] As Lucretius, Lib. V. sings;
Quæ sol atque imbres dederant, quod terra crearet
Sponte sua, satis ad placabat pectora donum.

bable, as some herbs are still used in a raw state *. Of these, the lettuce is one of the most valuable, from its ascescent and cooling quality; but as it is of an insipid nature, it is generally eaten with other herbs, in the form of a sallad, and a proportion of egg, oil, vinegar, and mustard, is added to it. Lettuce must be eaten young, and ought to be *blanched* or tied up, so as to be deprived of light, otherwise they are of an acrid nature. Celery also contains a poisonous acrimony, unless where it is blanched in the same manner; and instead of being used in a raw state, is most wholesome in broths, more especially in the summer season, when the stomach can best bear to be stimulated. Cresses is another article eaten raw, and is much relished for its aromatic qualities. Indeed, water-cresses have been celebrated as the wholesomest of all vegetable diet; and, according to Xenophon, the ancient Persians lived on nothing but bread and cresses, and water as drink. When boiled, they lose their aromatic, and other properties. The radish is another article consumed in its crude state. It is acrid, and most wholesome when scraped. Sorrel also is used in sallads. Endive and succory may be used in the same manner, provided they are blanched, by which they are deprived of their acrimony.

In regard to sallads in general, they are rather to be considered as articles of luxury than of aliment. Mons. Gosse found that such as were the most bitter, were the most digestible; that all of them were more digestible boiled, than raw; and that vinegar retarded their digestion. *Lettuce*, which

---

Indeed there are instances of persons living only upon grass and hay. Daniel, cap. 4. verse 32. 33.; Tulp. Oberv. Lib. IV. cap. 10.

* M. Gosse found that most of these articles are more digestible boiled than raw. See Adair's Medical Cautions, p. 226.

which contains a kind of opium, disposes to sleep, and may therefore make a proper article of supper, to such invalids as are in want of that refreshment. Cucumbers are very cold, and difficult of digestion. It is remarkable, that almost all nations have concurred in joining oil and vinegar to this kind of food; probably from experience, finding that they checked its disposition to ferment and become flatulent*.

7. *Pot-herbs.*—There are many articles which cannot be consumed in a raw state, but which are rendered wholesome by the operations of cookery, and are of use, particularly at a dinner meal, by increasing its bulk, and making less animal food necessary. Among the pot-herbs, the colewort tribe is the most important; and amongst them, the cauliflower and brocoli are the most valuable. Cabbage also are of considerable service, both for the use of men and of animals; but they are hard and indigestible, and require much more boiling than is generally given to them. They cannot be too much softened in their texture, to render them fit for the stomach. White cabbage is preferred for boiling, and the red for pickling. Artichokes†, asparagus‡, and

---

* Adair's Medical Cautions, p. 219. This fruit, whether ripe or unripe, contains a great deal of mucilage of a gluey nature, which prevents the other parts of the fruit from fermenting, and, consequently, causes indigestion. Cucumbers are used in summer as cooling food, but they are very injurious to the constitution, particularly when they get old. If they are eaten in a raw state, it should be with vinegar and pepper, as correctors of their noxious qualities. An Easy Way to prolong Long Life, p. 28.

† Artichokes, if young, and properly boiled, are of a tender texture; and furnish very bland and good nourishment. They are sweet, and of course nutritious.

‡ Asparagus is only wholesome, when in an intermediate state, between root and plant. When old, it is remarkably acrid; but when young, it is sweet and mucilaginous, and highly diuretic.

and spinage, are well known as useful articles for diet, easily digested, and not flatulent. They afford but little real nourishment. They are well calculated, however, for persons with weak stomachs, and who take but little exercise.

In regard to pot-herbs, in general, it is to be observed, that they are of considerable use, to counteract the putrescency of animal food, being of a watery, and somewhat ascescent nature. They are laxative, and are useful in summer, to relieve the bowels, when costiveness takes place, which often happens at that season of the year, from the increased discharge by the skin. They should be boiled by steam, by which their texture will be abundantly softened *. They certainly were not originally designed for human food, and are not, in general, so easily dissolved in the stomach, nor so grateful and nourishing, as roots are, but their noxious qualities are sometimes got the better of by cultivation, and sometimes removed by cookery.

On the subject of forcing some kinds of vegetables, as potatoes, &c. earlier in the season than nature dictates, it only produces an article, insipid and unwholesome, and which nothing but fashion, fancy, and luxury, would render in any respect barely tolerable.

8. *The Mushroom tribe.*—The class of vegetables called *Cryptogamia*, order, *Fungi*, is so numerous, that the bare enumeration or description of them, it was formerly said, would require a large volume; but this is greatly underrated, for Sowerby, in giving an account of the English mushrooms alone, with coloured figures, has taken up no less an extent than three volumes folio. Many of the fungus tribe are much esteemed in foreign countries, on account

---

* Turnbull's Medical Works, p. 72.

count of their high flavour. In England, according to Sowerby, there are four hundred varieties; but the garden mushroom is almost exclusively cultivated for food, or the manufacture of catchup. The wild mushroom, however, when found upon old and undunged pastures, is more delicate, than those raised on artificial beds. Good mushrooms are nutritious, resembling meat in many of their properties; but they can only be eaten, in any considerable quantity, by persons with strong stomachs. In Russia, the mushroom tribe contribute to the sustenance of great multitudes of people. They are eaten almost indiscriminately, and are kept salted for winter use. Haller says, that mushrooms are a doubtful and suspicious sort of food; and even, though apparently innocent, have sometimes proved prejudicial. They are certainly of a tough and leathery consistence; and, as vegetable acids are the best condiments to use with them, they are preferable in a pickled state. The truffle is a subterraneous fungus, growing generally in clusters, three or four inches under ground, without any visible root. Truffles are eaten either fresh, roasted like potatoes, or dried and shred into ragouts. Morels are also of the fungus tribe. Both when recent, and when dried, they are much esteemed at the table; and, in particular, form an excellent ingredient to heighten the flavour of ragouts. They are less dangerous than the common mushroom, and are a fashionable article to ornament dishes containing other food.

9. *Marine Plants.*—It is surprising, considering our insular situation, that so little attention has hitherto been paid to a great variety of plants with which our coasts abound. Hitherto, only three articles have been used as food, namely, laver, dulce, and the sweet tangle; but in China, we are told, that most of the plants that grow on

the sea shore, are found to possess an invigorating quality, and are, therefore, in constant use as pickles and preserves, or, simply dried and cut, are mixed with soups in the place of other vegetables. The leaves of one of these, apparently a species of that genus of sea-weed called by botanists *Fucus*, (the *Fucus Serratus*, Linn.) after being gathered, are steeped in fresh water and hung up to dry. A small quantity of this weed, boiled in water, gives to it the consistence of a jelly, and when mixed with a little sugar, the juice of an orange, or other fruit, and set by to cool, there is no jelly more agreeable or refreshing. The leaf is about six inches long, narrow and pointed, deeply serrated, and the margins cilliated; the middle part smooth, semi-transparent and of a leathery consistence. The Chinese call it *chin-chow**. In this country, marine plants are commonly used as condiment, or eaten raw, like sea-sallad, or the dulce.

10.

---

* Barrow's Travels in China, p. 552. This intelligent author, in his account of Cochin-China, p. 133, has given a fuller detail of this important subject. He observes, that in the populous islands of Japan, the natives of the sea coasts derive part of their sustenance from various kinds of sea weeds, and from none more than that species of *fucus* which is called *saccharinus*. It would appear from Mr Thunberg's account, of its leaves being used to ornament and embellish packages of fruit, or other presents offered to strangers, that this plant is there in high estimation, being considered, perhaps, as the representative of those resources of sustenance, which the sea so amply supplies, to such nations as, from choice or necessity, may be led to avail themselves of its productions. The *chin-chow* jelly of China may probably be made, in part, of the *fucus saccharinus*; for it would appear, from samples brought to England, that the leaves from which this jelly is made, are taken from three or four distinct species of this extensive genus. There is reason indeed, to believe, that most of the species, both of the *fuci* and the *ulvæ*, might be employed for similar purposes. From the shores of Robben island, at the Cape of Good Hope, the slaves are accustomed to bring away baskets of a species of *fucus*, whose leaves are sword-shaped, serrated, and about six inches long. These leaves being first washed clean, and sufficiently dried, to resist putrefaction, are then steeped in fresh water, for five or six days, changing it every morning;

after

10. *Miscellaneous articles*—Such is the variety of vegetables found capable of yielding food to man, that it is hardly possible to include the whole of them in any distinct class. Under the head of miscellaneous articles, sago may be included, which is a substance prepared from the pith of a species of the palm tree, growing in the East Indies. It is an article of a very nourishing nature, and forms a very considerable part of the food of the inhabitants in many districts in the East. In Europe it is principally used, as an occasional article of diet for the convalescent and the sick. Salep, a preparation from the root of the orchis, is a substance of a similar nature. It comes from Turkey and Persia; but the root is not uncommon even in this country, though inferior in point of size, and perhaps in quality. Tapioca is another nutritious mucilage, prepared from the roots of the cassada. Indian arrow-root agrees with these articles in its general nutritious property, but is reckoned to excel them all, in affording a much larger proportion of mucilage than any vegetable hitherto discovered. It has, however, a tendency to costiveness. Iceland liverwort, *(Lichen Islandicus)*, is another most nutritious substance. Boiled with milk alone, it yields a wholesome and

---

after which, if boiled for a few hours in a little water, they become a clear transparent jelly, which, being mixed with a little sugar and the juice of a lemon or orange, is as pleasant and refreshing as any kind of jelly whatsoever. And as few countries perhaps can boast of a greater number of species of the *fuci* and *ulvæ* than are found on the coasts of the British islands, future generations may discover those nutritive qualities which many of them contain, and not limit the use of them as articles of food to a few species, which is the case at present; for excepting the *esculentus* or *tangle*, the *satcharinus*, better known in Iceland than in Britain, the *palmatus*, or *dulse*, which the Scotch say is not only rich and gelatinous, but communicates to other vegetables with which it may be mixed, the fragrant smell of violets, and that species of *ulva* well known on the coast of Wales by the name of *laver*, all the rest seem to be neglected.

palatable nourishment much used by the Icelanders; in this country, it is chiefly used, from its demulcent quality, by invalids and convalescents. Vegetable mucilage, as gum arabic, is capable of nourishing, which is evident from whole caravans living on it for a long time when they can procure no other food. The natives of Senegal also, live much upon gum, but it is said, that they are obliged to drink great quantities of liquid with it, in order to distend their stomachs. In France, gum is used as a remedy for the heartburn, and in pulmonary complaints also, and often with success *.

ANIMAL FOOD.

THE idea of living upon other animals, has by many been condemned, as inconsistent with every principle of humanity. There are numbers of animals, however, both on land, and still more in water, who must live on animal food wholly, not being able to procure, or even to eat vegetables, if they could procure them. It was therefore intended by nature, that animal food should be eaten †. Besides, the numbers of animals living on the face of the globe, or the waters which cover its surface, are not thereby diminished; on the contrary, they are in many cases reared up, and protected, for the sole purpose of being afterwards used as food. All animals also must die, though when

---

* Fordyce's Treatise on Digestion, p. 109. Pinkerton's Recollections of Paris, Vol. I. p. 300.

† An ingenious poet has observed,

"Nor the green herb alone,
Unequal to sustain man's lab'ring race,
Hence ev'ry moving thing that liv'd on earth,
Was granted him for food."—Somerville's Chase. Book I.

when intended to be consumed, they are killed much earlier than they would naturally perish. At any rate, as it is now impossible to alter a custom so deeply rooted, and a means of subsistence in many cases necessary, and for which the human frame was naturally formed, we shall proceed to consider the different classes of animal food used by men, under the following general heads: 1. Quadrupeds. 2. Birds. 3. Fish. 4. Amphibious animals. 5. Miscellaneous articles of solid food derived from animals; to which will be added, some rules regarding the consumption thereof.

1. QUADRUPEDS.

This extensive source of animal diet, which affords more nourishment than any of the other sorts, may be considered under seven heads. 1. The cow kind. 2. The sheep kind. 3. Pork. 4. Goat. 5. Venison. 6. Hare. 7. Rabbit.

1. The flesh of oxen, properly fed, and of a proper age, is a highly nourishing and wholesome food, readily digested by persons in health, and on the whole, is justly accounted the most nutritious of all kinds of animal food *. Cow beef is not so tender, or nourishing, nor so easily digested, as that of oxen. Veal is tender and nourishing, but not so easily digested, nor so well calculated for weak stomachs as is commonly imagined; but, when properly fed, and well roasted, it is not so heavy as beef; and if the latter is suited for the robust and laborious, the former ought

---

* The following fact proves the nutritious qualities of beef. Humphries the pugilist, was trained by Ripsham the keeper of the jail of Ipswich. He was sweated in bed, and afterwards twice physiced. He was weighed once a day, and at first fed on beef; but as on that food he got too much flesh, they were obliged to change it to mutton.

ought to be given to the sedentary and the delicate. To weak and indolent stomachs, its digestion requires to be assisted by the addition of vegetable acids. There are several wild species of the ox kind, as the buffalo, &c. but their flesh is much inferior to the domestic ox. Roasting is the most nourishing form of eating beef. It is constantly in season, since, by the improvements in agriculture, oxen can always be abundantly supplied with food, even during the depth of winter.

2. Mutton is well known to be a highly nutritious and wholesome meat, and is perhaps more universally used, and indeed, more generally relished, than any other sort of animal food. Wedder mutton is most esteemed, and is by far the sweetest and most digestible. Ewe mutton becomes coarser and tougher after three years old. The quality of the flesh depends in a great measure upon the nature of the pasture, and the age of the animal. When fed upon a dry pasture, especially if mixed with wild herbs, and kept to four, five, or six years of age, no meat can be more savoury[*]. Lamb, when properly roasted, and of a proper age, that is from four to six months old, is an excellent food; but house lamb, the production of modern refinement, is a tasteless and insipid aliment, and must be unwholesome, from the manner in which it is reared.

3. The ancients considered pork as the most wholesome of all nourishment[†], and conveying most strength and vi-

gour

---

[*] Wedder mutton, when fed on dry pasture, near the sea shore, and at five years of age, is in its highest state of perfection. Roasting is the best form of eating it. It is observed, that the fat of mutton, from its tendency to coagulate, is less easily assimilated in the stomach than the fat of most other animals. The lean of mutton, therefore, is the preferable part for food. Turnbull's Medical Works, p. 54.

[†] A less quantity of this sort of flesh is necessary than most others, hence it is so cheap a diet. Its digestion should be assisted by acids. Indeed

pickled

gour to those who feel upon it. Hence it formed the chief food of the athletæ of ancient Rome, who complained of a sensible decay, when they disused this food for any space of time. Those, however, who are trained to athletic exercises in modern times, are fed on beef or mutton, in preference to pork, as it has a purgative tendency. The flesh of the sucking pig is reckoned a great delicacy, and is also nourishing, but is by no means a proper food for weak and sickly persons. Pork is a savoury food, and affords a strong nourishment, but suited only to those who lead an active and laborious life. The hog is the only domestic animal of no use to man when alive, (excepting for the manure it produces), and therefore properly designed for food. Besides, from its loathsome appearance, it is killed without reluctance. The flesh of the wild boar is reckoned more palatable and more easily digested than that of the domestic hog.

4. The domestic goat was anciently held in much estimation as food, and in modern times, the haunches of the goat are frequently salted and dried, and supply all the uses of bacon; the Welch call it *hung venison*. But the meat of the wedder goat, (the *hyfr* of Wales, or *aver* of Scotland), is accounted the best. It is called *rock venison*, and is little inferior to that of deer [*]. It is reckoned very nutritious in soup. In the West Indies, I am informed, that the flesh both of the ewe and of the wedder goat, is reckoned as good as mutton [†]. The flesh of the kid is a great delicacy

---

pickled pork is the best mode of using it, as the salt assists the solution of its oily parts. Turnbull's Medical Works, p. 55.

[*] Pennant's British Zoology, p. 149.

[†] Both on account of the milk it produces, and its flesh and skin, it is a pity that the West India goat is not more attended to in this country.

delicacy, and the Arabian physicians esteem it above every other.

5. In ancient times, in the hunter state of society, men lived much upon venison, and it certainly is not only a delicious, but a nutritive and wholesome food. Fallow deer is, on the whole, the best, though the flesh of the wild stag is the highest flavoured, and very palatable in autumn, when it is in a state of perfection.

6. The flesh of the leveret, is more nutritive, and more easily digested, than that of a full grown hare. The former should always be roasted, and the latter should be made into soup. An old hare is hardly eatable when roasted. The ancients considered the hare as the first of all quadrupeds for eating *; but in modern times it is reckoned dry and heavy. When killed after a long chase, its flesh is firmer and tougher than when killed in the seat, and is only fit to be converted into soup.

7. The flesh of the rabbit resembles that of fowl, and is equally digestible; the young, in particular, are well suited to weak stomachs. The tame is fatter and more tender than the wild rabbit, but the latter, from the greater variety of its food, is more agreeable to the taste. There is little viscidity in its meat, and consequently it is one of the lightest and most digestible foods in use †.

---

* Inter quadrupedes gloria prima lepus.—Martial.

† In the first ages, men, *Plato* observes, wholly abstained from flesh, out of an opinion, that it was unlawful to eat or pollute the altars of the gods with the blood of living creatures: however, after some time, they began to eat flesh; and that of swine was the first of all animals, they being wholly unserviceable to other purposes; but oxen for several ages were not eaten, it being thought unlawful, because they were serviceable to mankind in cultivating the ground. Burton on the Non-naturals, p. 192.

2. BIRDS.

The flesh of birds is lighter, drier, and more easily digested, than that of four-footed beasts; and is particularly calculated for persons in the studious professions, as the blood produced therefrom is clear, light, and full of spirit, and peculiarly favourable to the exercises of the mind *.

The various sorts of birds consumed as food, are either, 1, In a domesticated; or, 2, In a wild state.

1. The dunghill fowl is a most useful domestic animal, and whether when young †, or when at its full growth, affords a well known, delicate, and wholesome food. They are best when about a year old, and accustomed to range about, instead of being cooped up and crammed. The fat of the barn-door fowl, is equally dispersed throughout the muscular parts, whereas, when the bird is fatted hastily, the fat is accumulated in particular parts. Turkeys are of the same nature, and equally easy of digestion. This kind is remarkable for its tenderness when young, and its hardiness afterwards. Guinea or Indian fowls are more difficult of digestion than the dunghill fowl or the turkey.—The peacock is seldom eaten in modern times, though from its scarcity, or external appearance, it was anciently a principal part of Roman luxury. In former times, the swan was served up at every great feast in England, as a dish of state, when the elegance of the table was measured by the size

---

* Lynch's Guide to Health, p. 182.

† When young, the hen is particularly well calculated for invalids; and, in regard to mildness, is nearly equal to vegetable aliment. Young cocks are good eating. Capons, particularly *Poulardes*, or hen capons, are accounted delicate food.

size and quantity of the good cheer [*]. Pigeons furnish food of a dry and heating nature, and are best when young. They are so apt to produce inflammation, that if any person were to live upon them successively, for the space of sixty days, a fever would probably be the consequence.

2. The birds made use of as food, in a wild state, are to be found either on land or on water.

In regard to the first, the partridge is much valued as a delicate food, but is not equal, in point of flavour, to grouse or moor game, nor so easily digested. The quail resembles the partridge, but is apt to lie heavier on the stomach. The pheasant is less digestible than the common fowl, but is preferable in flavour. The ortolan is reckoned one of the greatest luxuries of the table. Among a variety of other land birds which are occasionally eaten, the woodcock principally merits to be noticed. It lives chiefly on insects, is of a tender structure, approaching to white meats, and resembling, in point of delicacy, the dunghill fowl [†].

As to water fowl, though many of the species are eatable, yet they are generally too fat, and fishy tasted, for any but the strongest stomachs. The teal, though much of the nature of the wild duck, is the most tender and savoury, and the most wholesome of this kind. The solan goose or gannet,

---

[*] Pennant's British Zoology, p. 149.

[†] It is well known that exercise produces firmness of flesh; this is particularly exemplified in the woodcock and the partridge. The woodcock is obliged to fly much about, while the partridge walks more, and flies less, hence it is observed, that the wing of the woodcock is always very tough, while that of the partridge is very tender; and on the contrary, the leg of the woodcock is very tender, while that of the partridge is very tough. Hence the old doggrel distich:

> If the partridge had but the woodcock's thigh,
> He'd be the best bird that e'er doth fly.

net, and the layer or puffin, are remrkable for a rancid fishy sort of meat, which it is very difficult to digest. Indeed, the whole tribe of wild water fowl cannot be much recommended. In regard to the same sort, the goose is wholesome food for strong stomachs, but even it requires onions or ardent spirits to assist the digestion. The tame duck is reckoned more delicate and wholesomer eating than the goose, particularly if properly fed, and kept, not on stagnant, but near clear and running waters, producing water cresses and similar plants *.

3. FISH.

The wholesomeness of fish in diet, has been much disputed. According to some, it is the most delicious food of any ; and according to others, it is without strength or substance †. It is certainly not adapted to be the sole diet of the laborious classes ; but it makes an excellent addition to vegetable food ; for instance, with potatoes, or other roots, what can be more acceptable than a salted or smoked herring, to give a relish to such insipid diet. It is said, indeed, that one barrel of salted herring, will, in this way, go as far as three barrels of salted beef. Fresh fish is certainly well calculated for sedentary people, and those who reside in towns ; and, at all events, it is fortunate to have such a resource for food in a populous country, to be made use of, when any exigency requires such aid.

It

---

* The finest ducks I ever tasted are, on that account, to be met with at Uppay, near Weymouth, in Dorsetshire.

† As a proof how little substance is to be found in fish, it is to be observed, that the jockeys, who *waste themselves* at Newmarket, are not allowed meat, nor even pudding, when fish can be got.

It is not improbable, that fish were, in some countries, the first species of animals used as food. The inhabitants of *Caramania* and *Gedrosia*, provinces of *Persia*, not only fed themselves, but their flocks, with fish; and were, therefore, called by *Herodotus* and *Strabo*, Icthyophagi, or fish-eaters. The *Egyptians*, whilst the Israelites resided in that country, lived on fish; and the *Banians* eat no other animal food *.

The texture of fish, in general, is more tender than that of flesh. They have nothing of a fibrous structure, like flesh; of course, they are easier digested than meat, especially such as are not of a viscid nature †.

It is a singular circumstance regarding fish, that, though we require vegetables with our meat, we hardly ever take them with fish. Cullen says, that, by way of experiment, he has taken apples along with fish, but found them to disturb digestion.

The objections to fish, however, are numerous. The nourishment derived from them, it is said, is incomplete, not so stimulating, nor so congenial to the nature of man, as either birds or quadrupeds: some classes of them also, as shell-fish, salmon, &c. are more indigestible than meat; and fish, in general, has a stronger tendency to putrefaction than meat. But the faults of fish, are somewhat corrected by the manner in which they are commonly eaten. In a fresh state, sauces and pickles of an acid nature are employed with them, and when dried, the action of the stomach is promoted by salt and spices.

---

* Adair's Medical Cautions, p. 269.

† Mons. Gosse found boiled perch very digestible; but he does not seem to have made many experiments with fish. *Cornaro* always found fish oppressive to his stomach. The scaly fish have been supposed to be more digestible than the others.—Adair's Medical Cautions, p. 198.

Fish, compared with flesh, is less nourishing; and the more viscid sorts harder of digestion. Hence many are under the necessity, after salmon, &c. to have recourse to a *dram* of some spirit or other to carry them off.

Fish may be arranged into three classes: 1. Fresh water fish. 2. Salt water fish; and, 3. Shell fish. It is proposed merely to touch on some of the principal sorts of each species, and to add some general rules regarding their consumption.

The salmon, though it lives much in the sea, may be included among the river fish, being principally caught in fresh water. It is highly nutritious, but not easily digested. It is of a heating quality, and, it is said, is apt to breed humours in the skin. The salmon-trout is more delicate, and less heavy on the stomach. The trout itself has a most delicate flavour. Eels are nourishing, but very difficult to digest. Carp and tench are reckoned wholesome. The pike is a fish of prey, and hence called the water wolf. If not too large, nor too old, it is firm, palatable, and wholesome; but the greatest care ought to be taken to avoid swallowing the bones, which are sharp, of a texture so peculiarly hard, that they will not dissolve in the stomach, and are apt to occasion fistulas. This fact is not so generally known as it ought to be.

2. The salt-water fish are numerous, wholesomer than even river fish, and furnish abundant means of subsistence. Of these, the herring, the catching of which gives occupation to thousands, is the most important. The cod is a valuable fish, and, when fresh, furnishes palatable, digestible, and wholesome food. The whiting is tender and delicate, and may be given to the weakest stomachs. The haddock is firmer in its texture, and consequently less digestible. The makerel is drier, and less nutritious. The flounder tribe are of an oily and juicy nature. The com-

mon flounder and the sole are more tender; the turbot and the holibut more viscid. Mons. Gosse found that the solution of skate was very tardy in the stomach; and other persons have found the salmon and sturgeon to be equally so.

3. The shell-fish are commonly accounted great delicacies, though not in general found digestible. They should never be eaten without vinegar, &c. In some constitutions they will produce much heat, anxiety, and fever; and, affording perhaps the most viscid gluten of any of these foods, are with difficulty expelled by weak stomachs. The crab is so heavy, that it is seldom eaten without the addition of acids and condiment. The lobster and the shrimp are generally used in sauces. The cockle is rather insipid, and the mussle, though a savoury food, yet is sometimes attended with disagreeable consequences, which, it is said, may be prevented entirely, by washing them well in vinegar and water. The oyster is considered to be a great delicacy, and many people can consume great quantities of them in a fresh or raw state. When dressed, they are less digestible. They form a very common mixture in the sauce of other animal food of an insipid nature, both fish and fowl *.

4. The following rules have been given regarding the consumption of fish. 1. Fish should be eaten as fresh as possible. When tainted, even in the slightest degree, they contain something very noxious to the constitution. 2. Fish should be eaten quite hot, and hardly ever (oysters excepted),

---

* Oysters are more easily digested when raw, than when dressed in any form whatever. They are reckoned nourishing, without being heating; and are very proper in consumptive cases, or for people who are recovering from a fit of sickness, whose weak stomachs will not digest flesh meats; &c.

excepted), in a cold state. 3. Less fish should be eaten than of flesh meat. 4. They should not be eaten too often nor after labour or exercise, for then they easily corrupt; neither should they be eaten after other solid food. 5. Though fish are alkalescent like other sorts of animal food, (indeed they contain, in general, more azote), yet, as they want stimulus, or spirit, and are defective in nutritious qualities, they require more condiment than terrestrial animals; hence acids, fermented, and even spiritous liquors, are often requisite to assist their digestion. 6. Those kinds of fish which are of an oily nature, as the salmon, the herring, &c. are more difficult of digestion than flesh, especially in weak stomachs; and of fish, those that have least flavour, that is, such as have least essential oil in them, are white, and have some degree of firmness, will digest much sooner than such as are of a stronger flavour: Hence flounders, whitings, haddocks, &c. are easier of digestion than salmon, soles, &c. 7. Fish is much improved by the addition of butter. Indeed, the use of butter sauce seems to be a rule followed from some instigation of instinct, rather than a precept of reason, as it has not yet been fully accounted for. The use of butter, at the same time, must make the fish heavier, and hence those disagreeable consequences arise, which render drams necessary, the fault of which is occasioned by the sauce, though the innocent fish are blamed for it. 8. Fish and milk are not proper together; nor are eggs to be used, unless with salt fish. 9. Great and slimy fish are better pickled than fresh; and the clearer and deeper the water is, the better are the fish that are nourished therein. 10. *Sea fish* are wholesomer than fresh-water fish; for they are hotter, and not so moist, and their nourishment comes near that of flesh meat. 11. Of all sea and river fish, those are best that live in rocky places; next to these, in gravelly sandy places,

and

and in sweet, clear, and running water, where there is no filth; but those fish are bad, that live in pools, muddy lakes, marshes, and in any still or muddy water. 12. Amongst all the fish, both sea and river, those which are not too large are the best, also those that have not hard and dry flesh, that taste and smell well, are crisp and tender, and have many scales and fins. 13. Fish are bad for cold and phlegmatic constitutions, at least are fitter for hot and choleric people. 14. The best way of dressing fish is to broil them; to boil them is the next; and to fry them is the worst *.

4. AMPHIBIOUS ANIMALS.

The amphibious tribe used in food are not very numerous. The tortoise or turtle is the only one that merits any particular attention. Of the turtle, there are four sorts, but the sea or green turtle is the most common. The meat of this sort of the turtle is wholesome and delicate; and it resembles, in its salubrity, veal, or young poultry. When used in its natural state, it cannot fail to prove highly nutritious; but when changed by the refinements of cookery, and united with such a number of heterogeneous articles as are common in its dressed state, its nourishing qualities must be in part destroyed; and the only effects of its intended improvement are, to excite fever, and to overload the stomach †.

---

* Lynch's Guide to Health, p. 192.

† Turnbull's Medical Works, p. 63.

3. MISCELLANEOUS ARTICLES, CONNECTED WITH ANIMAL FOOD.

Besides the food produced by the flesh of the animal, there are some articles of solid food derived from them, which it is necessary to touch upon: these are, 1. Butter. 2. Cheese. 3. Eggs; and, 4. Honey; and a particular species of nest.

1. Butter is a most valuable article. Cream, in a raw state, cannot be taken in considerable quantities, from its tendency to get acid and rancid, and consequently difficult to digest; but, in the form of butter, it may be used with advantage *. Fresh butter, in particular, when carefully made, and with a small proportion of salt, more especially if the cow is fed on natural pastures, is a most delicate sort of food, but the longer it is kept, and the more it is salted, it becomes the more unwholesome. When melted, it is well calculated to accompany such vegetables as are naturally dry of themselves, for it gives them the properties of rich oily substances. Mixed with other articles, it makes an excellent sauce for various sorts of fish, more especially those of an insipid nature. When melted with toasted bread, muffins, &c. butter is unwholesome and injurious to the stomach.

The use of butter is improper to children inclined to be gross

---

* It is a kind of fashion with some, to reprobate butter as very improper food, very slow of digestion, and having a tendency to generate gross and foul humours: much, indeed, must depend upon the freshness and quality of the article. It certainly strongly resists ascescent fermentation; is, by the consent of almost all nations, used with vegetables and fish, and, therefore, must have some qualities favourable to the digestion of particular foods.—Adair's Medical Cautions, p. 195.

gross and fat, but to brisk and active children, a moderate use of fresh butter may be of use, as it may check the acid fermentation, which is generally prevalent in their stomachs at that period of life. Oily matters are confessedly slow of digestion; they may contribute to a longer retention of food in the stomach, by which means it undergoes the necessary changes, and does not pass into the intestines in a crude state, which may occasion the generation of worms *.

2. Cheese is used either as food or as condiment. As food, it is not good for children, or weak stomachs, it is only suited to those who use great and constant exercise. The richer the cheese, the more nutritive it is, and soluble. The leaner, the more difficult to digest †. When cheese becomes rank and putrid, it ceases to be nutritive, and can only be considered as a condiment, or assistant to digestion. Toasted cheese is uncommonly heavy, and none but the strongest stomachs can digest it. New cheese itself is very indigestible food, being nothing but hard curd, which the powers of the stomach can scarcely dissolve.

3. Eggs contain a larger proportion of pure nourishment, than any other food. They are a most valuable article, not only when consumed by themselves, but when mixed with other articles. When new laid, they are peculiarly excellent; and those whose palates are not vitiated by luxurious indulgences, cannot have a more delicate repast ‡. Eggs should

---

* Adair's Medical Cautions, p. 285.

† Cheese is apt to produce costiveness: that sort is most wholesome which is warmest to the palate, such as Cheshire, &c. Cream cheese is very unwholesome, liable to rancidity, and hard of digestion. Indeed, like cucumbers, it ought never to be eaten at all by weak stomachs; or, if it is, plenty of pepper and salt should be used with it.

‡ All delicate foods, as eggs, milk, and butter, are injured by the access of air, which should be guarded against as much as possible. Eggs, when fresh,

should be subjected to as little of the art of cookery as possible. They should be either eaten in the shell, or *poached*, that is, boiling them only as long as is necessary to coagulate slightly the greater part of the white, without depriving the yolk of its fluidity. In this way, they sit easy upon most stomachs. Raw eggs are gently laxative, and are found to be serviceable in cases of jaundice and obstructed liver. They are also of use in bilious complaints. Raw eggs yield more nourishment than boiled ones, and are by far more soluble; but, as prejudice will not admit of this simplicity, and as even this food requires great moderation, a soft boiled egg is supposed to excel every other cookery of eggs that can be invented; and yields an innocent and nutritious food *.

4. Honey is a most valuable animal substance, though it disagrees with many people; and, in such cases, is more used as medicine than as diet. Where it does agree, however, it is most excellent food; and, in Sir John Pringle's opinion, was entitled to be called, the juice of long life or immortality. An ancient philosopher, (Democritus), being asked, when he had reached one hundred years, how he had contrived to live so long? answered, By the application of oil without, and honey within. Pythagoras, noted for his great age, and the enjoyment of health with it, lived much upon honey; and both Pliny and Dioscorides call it *utile senibus*.

5. There

---

fresh, are laxative, but when old, and hard boiled, are costive. The white part is more difficult to digest than the yolk. The white resembles the curd of milk; and that principle of the blood, called the coagulable lymph or serum, by which our bodies are supposed to be nourished. Adair's Medical Cautions, p. 197.

* Falk's Guardian of Health, p. 130.

5. There is a singular substance, a nest which a species of swallow constructs in the hollow of rocks, of sea-worms, and other gelatinous marine articles, which bears some affinity to isinglass, and is esteemed a great delicacy by the Chinese, the Cochin-Chinese, and the inhabitants of various islands in the Indian ocean. They dissolve it in their broths and soups.

Observations regarding Animal Food in general.

The flesh of wild animals must, on the whole, be better than that of the tame and domesticated, breathing a purer air, and feeding, without constraint, upon the articles they prefer. Their fibres, however, are more rigid and dry, whilst those of the domesticated kinds are more juicy and tender.

Tame animals are commonly used without their blood; whereas, the wild are commonly killed in their blood, and, upon that account, as well as their greater exercise, are more alkalescent.

Those domesticated animals which feed themselves, and are fattened on their natural food, are justly supposed to afford more wholesome nourishment, than those that are crammed or stall-fed; because, being deprived of their natural exercise, their juices cannot be so well assimilated*. Animals, in these days, are not so wholesome as formerly, from the practice of feeding oxen with linseed cakes, and some other animals with very improper foods, arts not formerly in use. Fatting animals, however, on proper food, is of service, as the flesh is thereby rendered more abundant, and indeed more nutritive.

---

* Adair's Medical Cautions, p. 188.

In the choice of animal food, we should always consider, whether it is in season or not, for the same sort of meat, which at one period of the year is good, may at another be hurtful. For example, pork is a wholesome food for many people in the winter season, but in summer, it is not fit to be eaten in a fresh state, unless particular attention has been paid to the feeding. By the arts of man, the other sorts of domesticated animals, are equally fat at the different seasons of the year, though every person of delicacy of taste, would prefer beef or mutton, fed on natural pastures, to those fattened on turnip, and by other artificial means. The proper time for using particular animal foods, is when their natural nourishment is in greatest plenty. As for that predilection for insipid premature meats, so much the fashion with luxurious people, it does not seem to be well founded; for nature certainly destined that they should attain their full growth by natural means, before they are used as food; their juices, in that state, being more nutritive and invigorating *.

Every animal, destined for slaughter, ought to be killed as soon as possible, unawares, and in its prime of health. When its blood is inflamed by over-driving, it must make unwholesome food, and resembling rather carrion than sound meat †.

It has been thought necessary to deprive domesticated animals, as much as possible, of their blood, when killed, as the meat is thereby longer preserved from putrefaction, though blood is not accounted an unwholesome article of food;

---

* Adair's Medical Cautions, p. 201.

† Falk's Guardian of Health, p. 122.

food; but, by over-driving those animals to slaughter, the blood is so diffused in the cellular membrane, that it cannot be emptied by bleeding; and the meat is heavier, to the benefit of the butcher, without any advantage to the meat *.

The custom of keeping meat for a considerable time, before we dress it, is with a view of rendering it more tender, palatable, and juicy, and easier of digestion. It is said, indeed, that a person may eat double the quantity of meat hung up for some time, without any prejudice to his stomach, than he can of meat fresh killed. When putrefaction has begun to take place in the meat, out of the body, it will doubtless sooner break down in it. Such meat, therefore, may be well calculated for weak stomachs; but what it acquires in tenderness, it loses in its nutritive quality. Hence, meat long kept, is not so nourishing, as that which is fresh killed.

The French, it is well known, do not relish animal food, unless it partake strongly of the *fumette;* but, as they eat a considerable proportion of bread with it, that, and their small wines, correct the putrescency †.

Meat apt to putrify, like the pigeon, is sooner digested than the duck, which is of a firmer texture.

Some parts of animals are more tender than others, and more easily digested, as the head, the tongue, the udder, &c.; others are more difficult of solution, as the external muscles, the stomach, and bowels, commonly called tripe. These last articles, however, are the most proper foods for persons of strong stomachs and quick digestion, who are disposed to high and inflammatory fevers, which a quantity of rich nourishment, thrown at once into the circulation, might produce *.

---

* Adair's Medical Cautions, p. 274.

† Ibid. p. 202.

The essential oils of vegetables, are often agreeable to the stomach, and stimulate it, so as to forward digestion; but animal oils, though agreeable to the taste, are not equally digestible. Hence pork, geese, ducks, salmon, &c. containing much of this oil, may be acceptable to strong stomachs; yet if eaten in too great quantities, or if the stomach be weak, they will disagree with it. Animal fat, however, ought not to be totally rejected. For, though oily matters, in large quantities, may oppress the stomach by their tenacity or viscidity, yet, as oil constitutes a very considerable part of our foods, both animal and vegetable, and as a large quantity of oil is deposited in various parts of the body, chiefly in the form of fat, it can hardly be conceived, that a principle which is so predominant in our bodies, should be inimical to health †.

The digestibility of food, depends much upon the nature of its fibres, and their being mingled with fat or otherwise. Hence beef is more difficult of digestion than mutton, the fibres of the one being larger than the other. Animal food also, whose fibres have little fluid between them, that is dry meat, is more indigestible than moist. Thus, lean animals, are harder of digestion than fat ones, and the lean part of fat meat, is easier of digestion, than the lean part of lean meat ‡. Owing to the same circumstances, meat roast-

ed

---

* Adair's Medical Cautions, p. 186.

† Ibid. p. 288.

‡ Dr Stark found, that the lean of meat is more digestible than the fat, which proves how well calculated fat meat is for the more laborious classes. There are some insulated facts regarding digestion, in his work, p. 94. which he would probably have brought into a regular system, had he fortunately lived longer.

ed or boiled a great deal, is not so digestible, as when roasted or boiled but little, the fluids being expelled by heat, and the fibres being compelled to approach closer to each other *.

Walleus found, that the aliments passed the stomach into the intestines in the following order: First, Milk in a very short time; next recent vegetables; bread in about four hours; some kinds of fish in five; some kinds of meat in six or seven hours; and, beef about the eighth hour. Sometimes bread, and at other times, flesh meats, have been retained much longer †.

Adair has given two tables of the relative digestibility of foods; and, on the whole, the arrangement is judicious ‡. But there must be many exceptions, owing to various circumstances; for instance, in beef, 1. according to difference of breed, the meat of some being marbled, or the fat and lean mingled together, which must be the most digestible. 2. According to size, the largeſt affording, in general, the toughest meat. 3. According to age, in oxen, the younger being the more digestible. 4. According to the mode of feeding. 5. The manner in which the animal is killed. 6. The time that the meat is preserved. 7. The manner in which it is dressed, &c. Hence it is impossible to give any general rule that can be of much use.

In general, it may be observed, that animals, at their full growth, are easier of digestion than very young ones. Mutton for instance, is easier of digestion than lamb; beef than veal; venison than fawn; and that on account of the viscidity of the flesh of young animals.

Doctor

---

* Easy Way to prolong Life, p. 36.

† Adair's Medical Cautions, p. 162.

‡ Ibid. p. 165.

Doctor Robinson of Dublin has proved, that food of seemingly firm texture, is of easier solution, than that which is more loosely compacted, but which contains a more viscid juice. The quality of difficult solution is owing, in some measure, to the lesser degree of alkalesency, (the great promoter of the solubility of our food), which the viscid parts of animals possess. The difficulty of digesting the flesh of young animals, must be owing to these causes, as they contain a much larger proportion of gelatinous matter than the old, and are likewise much less alkalescent. Hence beef, mutton, or grown-up fowls, are a more proper diet for a weak stomach, than tripe, calves feet, chicken, or various sorts of fish, which are remarkable for their viscid and glutinous quality *.

Young meats, however, containing a great proportion of nourishment, with little stimulus, are proper for young persons of good appetites and quick digestion, whose food ought to be more viscid, and less alkalescent †.

Comparison between Vegetable and Animal Diet.

Having thus gone through, in a cursory manner, but as minutely as the nature of this work would admit of, the various sorts of solid food, it may be proper briefly to consider, the general nature, of the two great divisions of vegetable and animal diet, and the advantages of each.

Vegetable food is certainly more ancient than any other; and indeed, as forming the food of the greater proportion of the animals we live upon, (fish being the principal exception), vegetables, either directly or indirectly, is the foundation of by far the greatest proportion of human nourishment.

---

* Falconer's Observations on Cadogan's Dissertation on the Gout, p. 110.

† Adair's Medical Cautions, p. 197.

In favour of vegetables it may be said, that man could hardly live entirely upon animal food *. Symptoms of putrefaction would soon oblige him to desist; and such food, if taken in too great quantities, would stimulate the system into a great extreme, render it weak, and hasten its decay.

Vegetable food also, is much better calculated for children, after they have done with their nurses' milk, and for young people in general, to whom too much meat is highly pernicious; hence, there cannot be a better food for children than potatoes, oat-meal porridge, and the like.

Vegetable diet likewise, is not unfavourable to long life, when accompanied with little bodily exertion; and when confined to a mild temperature and a passive state, it certainly deserves that preference, which humanity, on the one hand, and philosophy, on the other, have bestowed upon it.

It is also to be remarked, in favour of vegetable aliment, that it has no tendency to produce any constitutional disorders, as happens from animal food; and any effects it may have on the body, are almost entirely confined to the stomach and bowels, and seldom carry any injurious effect to

---

* It is said, that the Laplanders live for nine months in the year on rein deer, and the Greenlanders on fish. It is possible, therefore, to live upon animal food alone. From its tendency to putrefaction, however, it must produce disease; and if persons were to be confined either to animal or vegetable diet, the vegetable would certainly be preferable. It is said, that, during some periods of the year, the inhabitants of Cephalonia live wholly on currants, or a vegetable diet. Millions live only upon rice. It has lately been recommended to diabetic patients, to live entirely on animal food, but they find it almost impossible to continue that diet for any time.

to the system at large. Its effects hardly ever appear in the blood-vessels.

The last argument in favour of vegetable food is, that it is considered to have a particular influence on the powers of the mind; and tends to preserve a delicacy of feeling, a liveliness of imagination, and an acuteness of judgment.

There are many objections, however, to vegetable diet: as, 1. Its constant tendency to ascescency, or sourness and tartness; which, to a certain degree, is useful, and even essential to the animal economy, but carried to an extreme, is highly injurious[*]. 2. Vegetable aliment also cannot, without difficulty, be reduced to nourishment, or assimilated to the nature of man; an objection much felt by those who have weak stomachs, though the vigorous and robust are not affected by it. 3. From vegetable food, when thrown into the stomach, a considerable quantity of air is extricated, by which the stomach becomes distended, and much uneasiness is produced[†]. 4. Vegetable food is not so nourishing or invigorating as animal food.

Let us next consider what may be urged, first, in favour of, or, secondly, in opposition to, animal food.

In the first place, it is observed, that man is no longer the child of nature, nor the passive inhabitant of one genial spot;

---

[*] Porous bread, or mealy potatoes, though specifically light, may not be easily digestible, if they turn readily sour; nor is liquid food from vegetables to be preferred to solid, from the idea of lightness when it is likely to become ascescent, as water gruel. Beddoes's Hygëia, Vol. II. Essay VIII. p. 70.

[†] A considerable quantity of air is extricated or let loose by the warmth of the stomach, and the dissolution of vegetable food. Many articles, as the cabbage, and other plants and roots, abound with air; clover is so full of it, that, when eaten in any quantity, it distends the stomachs of the cattle who devour it; and, unless soon relieved, they are known to burst from the effects.

spot, but, as a citizen of the world, is exposed to constant toil and exertion; he requires, therefore, a more ready, and more easily assimilated nourishment, than vegetable food can bestow. In many situations, indeed, the vigour of his system is so weakened, by extremes of temperature, that the most stimulant and invigorating foods are necessary to counteract the effects thereof.

Vegetables are of use, in order to fill the stomach and bowels, without which digestion does not go on so well; but a great part of our diet, however, should be solid, and of an animal nature, not only that we may be under a necessity of chewing it, to promote the process of digestion, but that the pressure of this solid food, on the secretory vessels of the stomach, may stimulate them to discharge a larger proportion of the gastric and other humours, into the stomach and intestines *.

Animal food is favourable to labour.—We can subsist longer upon it than vegetable; that is, we are sooner hungry after the latter, which shews that its nourishment is sooner exhausted †. Animal food also, consists of parts which have been already digested by the proper organs of an animal, and applied to the same uses, consequently, requires only solution and mixture, whereas, vegetable food must be converted into a substance of an animal nature, by the proper action of our own viscera, and, consequently, requires more labour of the stomach and other digestive organs ‡.

Nature

---

* Adair's Medical Cautions, p. 214.

† Ibid. p. 282.

‡ Burton on the Non-naturals, p. 213. It appears, from the information of a patient received into the general hospital at Vienna, with a perforated stomach, that flesh meat was constantly digested with expedition and ease, but that vegetables, in general, were much longer in undergoing this process. Beddoes's Hygëia, Vol. II. Essay VIII. p. 19 & 20.

Nature also seems to have provided other animals for the use of man, from the astonishing increase of some valuable sorts. For instance, so quick is the produce of pigeons, that in the space of four years 14,760 may come from a single pair; and, in the same period of time, 1,274,840 from a pair of rabbits *. Pliny, therefore, has well observed, that nature has shewn great kindness in causing those things to be so prolific, that are are so well calculated for our food †. This is nothing, however, to the increase of the cod, in the roe of which there are millions.

It is also to be considered, that if animals were not killed for food, we should lose a great number of the comforts of life. Besides meat, we obtain, by the slaughter of animals, a number of important articles; as, leather for our shoes, and many other purposes, fat for candles or soap, &c. &c.

It may also be observed, that without animal food, so many millions of human beings could not be maintained, more especially in bleak and northern countries, where the finer and most useful sorts of vegetables are raised with difficulty.

Many objections, however, are urged to the use of this sort of food.

Animal food is certainly more dangerous, and, in some respects, more wasting, than vegetable. By exciting temporary fever after every meal, the springs of life are urged into constant, preternatural, and weakening exertions.

The late Sir Edward Berry prevailed with a man to live

---

* See Swedish Essays, translated by Stillingfleet, 1st ed. p. 75.; and Pennant's British Zoology, p. 48 and 89.

† Lib. VIII. c. 55.

for eight days on partridges, without vegetables, but was obliged to desist, from the appearance of strong symptoms of putrefaction. The result of this experiment shews, how necessary it is, to mix vegetables with our animal foods *.

Such food, therefore, ought to be qualified by a proportion of sedative vegetables, according as the habit of body or mode of life may require †.

Persons who live entirely on animal foods, either fish or flesh, are subject to various fatal disorders; as the scurvy, the itch, the leprosy, malignant ulcers, and fevers; a proof how necessary a mixture of vegetable food is to the preservation of health ‡.

Animal food, without a mixture of vegetable, is apt to continue too long in the stomach before it dissolves. In this case, it will sometimes begin to putrefy before it be passed off; which putrefaction, getting into the blood, will often bring on a putrefaction of all the fluids of the body. This is a complete sea-scurvy, which, if not timely remedied, always terminates fatally §.

Though animal food is more nourishing than vegetable, yet it is not so safe to live upon it alone. In all cold countries, however, it is certainly necessary, being a proper and useful stimulant, where the action of the system is depressed; but the major part of the aliment ought, nevertheless, to consist of vegetable substances. There is a continual tendency in animal food, as well as in the human body itself,

---

* Adair's Medical Cautions, p. 202.

† Ibid. p. 205.

‡ Ibid. p. 206.

§ An Easy Way to prolong Life, p. 11.

itself, to putrefaction, which only can be counteracted by the free use of vegetables *.

As animal food fills the blood-vessels fuller with blood than vegetable, it naturally increases our muscular strength; but then it loads the brain at the same time, which occasions heaviness and stupor; whereas vegetable food, from not loading the system with blood, rather diminishes muscular strength, but enables the blood to act with greater force. Vegetable food, therefore, is fitter to give clearness of ideas, and animal food is best adapted to labour †.

Animal food is certainly more nourishing, but is easily carried to excess, and exposes us to danger; and, by its alkalescency, lays the foundation of disease, in particular, corpulency, obesity, and putrescent acrimony.

Animal food is less adapted to the sedentary than the laborious, and least of all to the studious, whose diet ought to consist chiefly of vegetables. Indulging in animal food, renders men dull, and unfit for the pursuits of science, es-

---

* Buchan's Domestic Medicine, p. 622.

† The following are some, among the many admirable observations which Cullen has handed down to us, on the subject of animal and vegetable food. It is plain, he remarks, that delicacy of feeling, liveliness of imagination, quickness of apprehension, and acuteness of judgment, more frequently accompany a weak state of body. True it is, indeed, that the same state is liable to timidity, fluctuation, and doubt; while the strong have that steadiness of judgment, and firmness of purpose, which are proper for the higher and more active scenes of life. The most valuable state of the mind, however, appears to reside in somewhat less firmness and vigour of body. Vegetable aliment, as never over-distending the vessels, or loading the system, never interrupts the stronger motions of the mind, while the heat, fulness, and weight of animal food, is an enemy to its vigorous efforts. Temperance, then, does not so much consist in the quantity, for that always will be regulated by our appetite, as, in the quality, viz. a large proportion of vegetable aliment. Cullen's Lectures on the Materia Medica, p. 249.

pecially when it is accompanied with the free use of strong liquors*.

But the worst property in animal food, is its viscidity, or glariness. This is particularly the case with veal, pig, young birds, &c.; and fish have it in a great degree, particularly shell-fish, which, on that account, are so injurious to many. From the slimy nature of viscid food, it eludes the action of the stomach, and, not being divided into minute parts, the gastric, or dissolving juice of the stomach, has the less influence upon it. Hence such foods are so indigestible†.

In the last place, though the tendency of animal food to promote chronic diseases, may not take effect, where the food is accompanied with a sufficient portion of labour or exercise, yet it cannot be doubted, that animal food alone, is not favourable to the attainment of longevity.

On the whole, however, it would appear, that there are advantages and disadvantages, connected both with vegetable and animal diet, and that a mixture of both is the proper plan to pursue ‡. Indeed, from the very structure of the human organs, it is evident that nature designed man for a mixed aliment. His teeth, stomach, and intestines, give evidence

---

[*] Buchan's Domestic Medicine, p. 621.

[†] Viscid food is of a clammy, glary nature, like the white of an egg; it adheres to the sides of the stomach, and, by so doing, throws the blood, from other parts of the body, in such quantities upon the brain, as to oppress it, and sometimes to occasion apoplexy. Mussles are of a very viscid nature, and, on that account, many persons are disordered by eating them.

[‡] There ought to be a certain proportion of animal and vegetable substances in the food of man. The animal tending spontaneously to putrefaction, the vegetable correcting that tendency from going too far. Thus, from the due mixture of both qualities, results that neutral property, equally distant from acid as alkali, that is essentially necessary to produce good blood.

evidence of this; for, by the first he appears equally a carnivorous and graminivorous animal; by the second, he approaches to the carnivorous; and, by the third, he shews a union of both. The perfection of his character also requires that mixture. For instance, the Tartars, who live wholly on animal food, possess a degree of ferocity of mind, and fierceness of character, which form the leading feature of all carnivorous animals. An entire diet of vegetable matter, on the other hand, as appears in the Bramin and Gentoo, gives to the mind a gentleness, softness, and mildness of feeling, directly the reverse of the former character, but with little elevation of mind. A mixture of both diets, therefore, is the best suited to the constitution, and the dignity or perfection of man. In regard to the proportion of this mixture, it cannot be very minutely ascertained. It must depend upon various circumstances, in particular, 1. The state of the climate. 2. The occupation of the individual; and, 3. His bodily health.

1. In warm climates, it is admitted that a vegetable diet may be carried to great excess, without much inconvenience. Indeed, such climates produce the greatest proportion of vegetable food, and more of those spices, and other articles, by which the mischievous effects of that food can best be counteracted. In cold climates, on the other hand, there should be a greater proportion of animal food, as, from the want of heat, a greater stimulus is required for the system, and also from the smaller perspiration, and little tendency to putrefaction which the fluids discover.

2. In regard to the second point, where little bodily exertion is employed, much animal food, fresh fish alone excepted, is improper in any climate, as it will load the body and oppress the mind; but where, on the other hand, bodily exercise is much employed, the use of animal food

should

should be liberal, and even the vegetables used, must be of the most nourishing, or farinaceous sorts.

3. As to health, the conduct of the individual must be regulated according to circumstances. In the gout, a vegetable diet is in general to be recommended *; but sometimes an excess of animal food is necessary, when the disease is not regularly formed, to drive it to the extremities. In the same way, hysteric and hypochondriac complaints, from the disposition of the stomach to ascescency, requires a diet of animal food, as the only means of alleviating the symptoms of these diseases; and it is well known, that the French, are accustomed to take great quantities of bread, and dried, or other fruits, with their animal diet; and thus, probably, escape many of those disorders by which the English constitution is apt to be affected †.

SECT. III.

The Means of preserving Food till it is consumed.

SOME articles of food cannot be consumed too rapidly, after they are destined for that purpose. This is particularly the case with the more delicate substances, as eggs, milk, and butter, the class of fish, and the generality of the vegetable tribe. Some kinds of fruit may be excepted, as the pine-apple, the orange, and the pear, when pulled not perfectly ripe. Various articles of animal food, however, as has been already observed, are the better of being preserved for some time, more especially in cold countries. In the warmer climates, indeed, where excess of heat renders the process of putrefaction too sudden, the meat is used in its best state while it is yet warm, and almost before life is extinguished. In this country, on the contrary, on the extinction of life, a density, or firmness of fibre, takes place. Hence new killed meat is hard, tough, and not easily broken down. This state, however, alters as soon as the process of putrefaction begins, which soon loosens the connexion of every part. No animal food, therefore, should be used in this country, until it has been preserved for some time, according to the coldness or the warmth of the season. In regard to wild animals, this rule is carried so far, as to render them unwholesome, and almost unfit for use.

---

* Mr Slingsby lived many years on bread, milk, and vegetables, without animal food or wine; he had excellent spirits, was very vigorous, and was free from the gout ever since he began that regimen. Dr Knight followed the same plan with equal success. See the Works of William Stark, M. D. p. 93.

† Barry observes, that the great difference between a strong and weak constitution is, that the former can assimilate food of a difficult digestion into an healthy serum, and discharge the superfluous quantities, while the other is oppressed, and variously affected by it. Barry on Digestion, p. 91. Hence he contends, that animal diet, being more easily assimilated

Men, however, would soon become desirous, not only to preserve food for a few days, and to render it more palatable, but would also see the necessity of laying up, while they had it in their power, a store of provision for future use, in order to prevent any risk of scarcity or famine. The various arts which have been discovered for that purpose, may be classed under the following general heads. 1. Drying in the sun. 2. Artificial heat. 3. Salting.

---

ed than vegetable, is better calculated for weak constitutions; and that persons with a strong constitution, who use much exercise, can best digest, and more safely live on a diet of the vegetable kind, and water for drink, than those of weaker stomachs. Ditto. p. 110.

ing. 4. Pickling. 5. By butter. 6. By sugar. 7. By ice. 8. By charcoal.

1. The simple process of drying by exposure to the sun and air, was probably the first means thought of to preserve vegetable or animal food. Drying grapes, is an idea which nature itself pointed out to the savages of hot climates; and, as it appears that several tribes or nations had originally no other mode of dressing their food, but by exposing it to the rays of the sun *, this would furnish a hint of the means by which animal food might be preserved. Indeed, in dry climates, fish are easily cured by exposure to the sun and air, with the addition of saline particles, or even washing them in salt water.

2. Accident would soon discover, even to wandering savages, that the smoke of the fires they used, might be made applicable to the same purpose, more especially with a little addition of salt. The use of artificial heat was afterwards extended in different ways, in particular to the baking of fruit. By evaporating the water from fruits, that is, by drying them, and expelling both air and moisture, we lessen their disposition to ferment, and make them less flatulent and more nutritive.

3. Salting is a process of very general use, though, with a few exceptions, confined to animal food. Sour crout, and salted mushrooms, the former used in Germany, and the other in Russia, and salted olives, are almost the only exceptions. The most proper kinds of meat to be salted, are those that possess a large proportion of oil or fat in their composition, as pork, bacon, &c. This is a very extensive subject, on which volumes have been written; all that is possible to attempt upon the present occasion,

---

* Goguet's Origin of Laws, Vol. I. p. 81.

is a few cursory observations. 1. It is most essential to apply the salt, to the article cured, as soon as possible after the death of the animal: it is by this means that the Dutch cure their herrings in such perfection. At Algiers, from the heat of the climate, they are obliged to salt their meat immediately after it is killed; and I understand, that, in consequence of that circumstance, their salted provisions *are peculiarly excellent.* This is a hint, of which we ought to avail ourselves in this country; and a moment's consideration must satisfy every reflecting mind, how much better the meat must be, when salted before any putrefaction has had time to commence, than after. 2. Much also must depend upon the purity of the salt; and, it is unfortunate, that in this country financial regulations should prevent that valuable article from being properly manufactured. 3. Salted provisions, when imperfectly cured, after putrefaction has begun, or when improper materials have been made use of, must be a sapless, and unwholesome diet, and drained of all its nutritive juices; and living on such food, must exhaust the power and action of the stomach, and no proper supply of chyle can enter the circulation [*]. It is not to be wondered at, therefore, that persons living during a long voyage on such food, should be afflicted with the scurvy [†]. 4. For the use of working people, however, salted provisions is preferable to fresh. The porters and coalheavers of London, who are obliged to devour great quantities of meat, as well as to drink great quantities of porter, in order to support themselves in the great labour and fatigue they go through, find it more salutary to live upon salt meat, which does not digest so soon as the fresh, and is not so apt to produce fluxes; and ploughmen, who have strong stomachs, and quick digestion, are more properly, and more safely fed, on rusty bacon, than on the more digestible foods, provided it is duly qualified by vegetables *. 5. Cadogan asserts, that the same salt, seasoning, and smoke, which harden and preserve salted meats from putrefaction, before they are eaten, keep them from dissolution afterwards, so that they are never properly digested at all, nor is it possible that any good nourishment should ever come from them †. Doctor Falconer, on the other hand, observes, that many valetudinarians, whose stomachs could not bear a piece of veal, lamb, or chicken, from their flesh being of so viscid a nature, have easily digested a piece of ham or of dried beef, which proves that salt meat is not so difficult of digestion as Cadogan and other authors have mentioned ‡. 6. It is also urged in favour of salted meat and fish, that though they are less nutritive, yet they are the more digestible, unless they have acquired any degree of rancidity, which they are very apt to do, especially bacon and fish. The salt increases their stimulus on the stomach; and though Mons. Gosse found that

---

[*] This doctrine is enforced in Dr Wright's Directions to Officers going to the West Indies. See the Appendix.

[†] Of old, from the scarcity of winter food, the inhabitants of this country were obliged to salt their provisions, and lived, during the winter season, principally on salted meat, without much vegetable food. They were, of course, much afflicted with the scurvy.

---

* Adair's Medical Cautions, p. 186.

† Cadogan's Dissertation on the Gout, p. 54. He goes so far as to say, (p. 58), that the substances we feed upon, ought all to be in a perishable state, otherwise they will never furnish the materials of good blood. Whatever is hardened or seasoned, so as to keep long before it is eaten, ought not to be eaten at all; for it will never dissolve in the stomach.

‡ Falconer's Observations on Cadogan's Dissertation on the Gout, p. 63.

that fried bacon and eggs were very indigestible, the eggs, in particular, becoming highly alkaline in the stomach; yet he found lean salted beef was easier of digestion. Salted meat, therefore, can only be very injurious, when, by long keeping, the putrescency of the meat, prevails over the preserving power of the salt, and part of the salt becomes ammoniacal *.

4. Pickling is properly performed by the use of vinegar and aromatics †. It is applied both to animal and vegetable substances. In the first case, it is intended for food; in the second, as condiment or seasoning. Pickled salmon is an article of the first sort: when eaten cold, it is heavy, and requires a strong stomach; but it is a great improvement on pickled salmon, to warm it again, by steam, or in hot water, when it resembles fresh salmon used with vinegar.

5. Many articles also, particularly fruits, are preserved by sugar, either in a dry or in a wet state. This includes a material branch of the art of the confectioner. Mons. Gosse found, that fruits boiled with sugar were very easy of digestion, and that any tendency to fermentation in fruits,

---

* Adair's Medical Cautions, p. 204. It is impossible, however, to go so far as Bacon and Boerhaave. The first recommends flesh and fish, rather powdered and salted, than fresh and hot. See Code of Longevity, Vol. III. p. 171: and Boerhaave, for prolonging life, prefers dry and salted meat, also salted and old fish, and in general every thing that is dry, hard, and tenacious; grounding his opinion on this principle, that they resist more dissipation and putrefaction. De Dieta ad Longævitatem, Num. 1057.

† Slight salting is also called pickling, but improperly. In Scotland they use a very appropriate term for slight salting, they call it *powdering*, and sometimes *corning*. There is no better mode of eating boiled beef than in that state. That preparation called *brawn*, made from the flesh of an old boar, is by means of saucing, or pickling with salt. It produces an article insipid and horny, and which none but the strongest stomachs can digest.

fruits, was greatly corrected by the addition of sugar and spices.

6. The art of preserving meat, fish, &c. in ice or snow, has long been known, in various countries, as in Russia, Spain, and China, but has only been recently attempted in Great Britain. It has hitherto been solely applied to the conveyance of salmon, from the remote parts of Scotland to London; a plan originally recommended, by that respectable senator, George Dempster, Esquire. It is remarked, that unless the ice is very gradually dissolved, the fish is very apt to lose the firmness of its texture.

7. The principal difficulty in preserving meat, being the total exclusion of the air; one mode of effecting this, is by *potting*, as it is termed, the meat or fish being put up in pots of earthen ware, and covered with butter. This plan is not carried to any great extent.

8. Meat might probably be preserved, in various other ways, as by means of gum, or by meal; for it is known, that a leg of mutton has been kept for a long time in a fresh state, excluded from the air, by means of oatmeal. Charcoal also, is such an enemy to putrefaction, that meat might be preserved, in that substance, in a pounded state. It is said, that game or poultry may be preserved for a long time, by tying a string tight round the neck, so as to exclude the air, and by putting a piece of charcoal into the vent. If any meat is tainted, wrap a piece of charcoal, from three to six inches, in a piece of muslin, or thin linen, and boil it with the meat, and it will destroy all the putrefied taste or smell *.

---

* I have been informed, that a haunch of venison, thoroughly tainted, has been restored, so as to be fit for use, by being repeatedly rubbed with charcoal. Tainted fish also may be much restored, by mixing a considerable quantity of vinegar and salt in the water in which they are boiled.

There are few objects which require more public attention, than to ascertain the best means of preserving meat in a wholesome state, more especially for the use of our seamen, and for the lower orders of the community, to whom salted provisions, are not only a safe, but a salutary source of aliment.

SECT. IV.

The Cookery, or the Mode of preparing Food for Consumption.

THE primeval inhabitants of the earth, certainly eat both their vegetable and animal foods raw; and to this day some of the African nations, the Esquimaux Indians, the Patagonians and Samoeides, devour raw flesh and fish, and drink the blood of the animals. Raw flesh produces great bodily vigour, ferocity of mind, and love of liberty *.

In general, however, animal food undergoes some preparation before it is consumed. It is hardly to be credited the shifts which some tribes have been put to, in order to obtain that object, as putting heated stones in the bellies of pigs to roast them, or burning the straw in order to parch the grain. From these humble attempts, the great refinements of cookery, which is properly a branch of chemistry, originated.

It is certain that cookery is an useful art. By it many articles are rendered wholesome, which could not otherwise have been eaten; but by it, at the same time, it must be acknowledged, that some articles are rendered unwholesome, which would otherwise have produced nourishing food.

---

* Adair's Medical Cautions, p. 272. The famous philosopher Zeno, the first of the Stoic sect, eat all his food raw. Other individuals have also lived on raw meat. Diogenes, it is said, fell a sacrifice to that practice.

By cookery, our foods are rendered more palatable and digestible; and, when prepared in a simple manner, more conducive to health *.

Cookery may be considered under two general heads, the simple, and the refined or compound.

The first, though apparently easy, requires a considerable degree of attention and experience; and the second is an art of so diversified and extensive a nature, that it is rarely carried to any considerable degree of perfection; and it would have been no loss to human nature if it had never been invented †.

Simple cookery includes the following modes of dressing meat: 1. Roasting. 2. Boiling. 3. Stewing. 4. Broiling. 5. Frying. 6. Baking; and, 7. Digesting.

1. Roasting was certainly the first mode invented to prepare animal food; for boiling was a more complicated process, and required the art of manufacturing vessels that could withstand the effect of heat. Roasting, it is well known, requires a greater proportion of heat than boiling, and more skill in the preparation ‡. By the application of fire,

---

* The Abbé *Spallanzani* found, that dressed meats were more digestible than raw, and roasted meats more so than boiled; and Dr Stevens, from experiment, tells us, that the high-flavoured alkalescent meats are more digestible than the more insipid. Adair's Medical Cautions, p. 287.

† Adair, in his Medical Cautions, p. 172. (Note), says, that Doctor Saunders proposed to publish an essay on the present modes of cookery, pointing out the impropriety of certain mixtures and ingredients in our modern dishes. As Doctor Saunders was so well qualified for the task, it is unfortunate that his intentions were never carried into effect. It shows the necessity of an author's completing a work as soon as he undertakes it.

‡ On account of the difficulty of roasting meat well, and the nicety of the

fire, a considerable proportion of watery substance is exhaled from the meat. In order to be done properly, the roasting should be conducted in a gradual manner, and the heat moderately, but steadily applied, otherwise exsiccation, rather than roasting takes place. Roasted meat is certainly the best means of consuming the flesh, and tasting the natural juices of the meat. It is also peculiarly calculated for birds of every sort, and for young and tender meat, taking off its viscidity, and giving it a firmness and dryness that otherwise it would not be possessed of *.

Roasted meat, at least of the larger kinds, as beef, mutton, and venison, is preferred in England, and boiled or baked meat in France. The meat of England has not, perhaps, the same flavour as that of France; but it is larger, richer, and fatter, and appears to most advantage in a roasted state. Besides, coal fires are better adapted for that process of cookery, than wood or peat. It is found, indeed, that meat, roasted by a fire of peat or turf, is more sodden, than when coal is employed for that purpose.

Our meat in England, Cadogan asserts, is generally overdone, and particularly over-roasted †. In regard to overroasting, the action of fire, if continued too long, has a tendency to change mild animal flesh into something of another

---

the whole preparation, Count Rumford invented a mode of doing it in a kind of oven, which had the effect, but has not, I understand, come into general use.

* The stomach can certainly bear roasted meat better than raw; but I scarcely think that we can digest twice the quantity of roasted oysters, that we can when raw, which some authors affirm.

† Old and full grown animals may be safely eaten when under roasted, but not young meats, as veal, lamb, pig, &c. Unless they are thoroughly roasted, they are apt to make the person who eats them sick, unless he has very strong digestive powers.

another quality; the fat, in particular, becomes bitter and rancid. The less, therefore, that all flesh meat undergoes the power of the fire, the milder and wholesomer it is *. This doctrine, however, is denied by Falconer. He admits, that meat little done, is the most soluble; but, at the same time, contends, that it is exceedingly alkalescent, and runs quickly into putrefaction. Hence the French, who live in a warm climate, find it necessary, not only to eat a great quantity of bread, to prevent the putrefying effect of animal food, but also to have their meat thoroughly boiled and roasted †.

2. Boiling is also an excellent mode of preparing animal food, rendering it more soluble, without destroying, if properly done, its nutritious qualities, and being peculiarly calculated for weak stomachs ‡. But, however useful moderate boiling may be in these respects, yet, when carried to an extreme, every thing soluble is extracted, the nutritious parts are conveyed to the liquor, and the meat itself is left behind, insipid, dense, and unfit for nourishment.

Young and viscid food, as veal, chickens, partridges, &c. are more wholesome when roasted than boiled, and easier digested; but beef and mutton are easier digested when boiled

---

* Cadogan's Dissertation on the Gout, p. 55.

† Falconer's Observations on Cadogan's Dissertation on the Gout, p. 64.

‡ Some medical writers have rested much upon the dietical difference between roasted and boiled meats; but the only difference is, that by the force of a roasting, or frying fire, the elements of animal substances are formed into a kind of vinegar; and thus, roast-meat may be said to make its own *sauce piquante*. The pungent taste of the brown out-side, depends upon the newly formed acetous acid, which will certainly offend a weak stomach. The inside of roasted meat, differs in no material respect, from the boiled; but the boiled, from wanting this sour incrustation, is of a milder nature, and with its own gravy, is the best food for the weak and the dyspeptic. Manual of Health, p. 312.

boiled than roasted *; consequently, boiling such meat, is better calculated for weak stomachs.

Boiling is particularly applicable to vegetables, rendering them more soluble in the stomach, and depriving them of a considerable quantity of air, so injurious to weak stomachs.

The usual mode of preparing fish for the table, is by boiling, roasting rendering them more indigestible.

It is proper to observe, that those who are trained to athletic exercises, have their meat roasted or broiled, and not boiled; as it is supposed that, when boiled, a great part of the nutritive juices of the meat is lost in the water.

3. Stewing is reckoned the mode, by which the greatest quantity of nourishment is obtained from meat. By this plan, the texture of the meat is rendered more tender, its soluble parts are not fully extracted, and it is left in a state abundantly sapid and nourishing, while the soup also, or fluid, contains a sufficient proportion of the animal extract.

4. Broiling consists in exposing meat to the near application of a naked fire, by which means, its outer surface immediately hardens, before the heat has penetrated the whole. This prevents any excess of exhalation, and the meat, when done, is rendered sufficiently tender. It is peculiarly suited for steaks, which are, comparatively speaking, eaten in a juicy, and almost a raw state.

5. Frying is a process that renders meat more indigestible than any other; and, indeed, might be included under the head of compound cookery †. It is performed by

---

* Easy Way of prolanging Life, p. 41.

† In a recent work, published, it is said, under the auspices of a respectable physician, a mode of *frying* beef-steaks is mentioned, (Culina, p. 39.) which, the author observes, cannot be considered otherwise, than as

cutting meat into thin slices, and putting it in a vessel over the naked fire. As the lower surface of the meat would thus be burnt or hardened, some fluid matter, generally of an oily nature, is introduced, which acquires, from the heat, a burnt or empyreumatic taste, and becomes hardly miscible with the fluids in the stomach. It requires, therefore, the addition of stimulants to enable the stomach to digest it *.

6. Baking consists in the application of heat to meat in a dry form, but in a vessel covered with paste, instead of its being exposed to the open air. Any considerable exhalation is thus prevented, and the meat, by the retention of all its juices, is rendered more sapid and tender. But baked meat sits heavy on some stomachs, from the greater retention of its oils, which are in a burnt state. It requires, therefore, the additional stimulus of spices and aromatics, to render it lighter, and to increase the powers of the stomach to digest it.

7. Digesting is the last discovered process of simple cookery. It is performed in a close vessel, and resembles boiling, being conducted in a very high temperature, while, from the closeness of the vessel, the advantages of stewing are procured. It is not, however, much in use.

Besides these various simple modes of preparing animal food, there is another, which it may be proper here to take notice of, namely, when animal food is dissolved in water, and

---

a dish prepared to satisfy the appetite, and not to pamper it. In that case, frying ought to be included among the branches of simple cookery.

* Fried meat ought to make the least part of salutary diet, because the flesh which is dressed in this manner, undergoes a much more violent heat than that which is boiled; for oil requires six hundred degrees of heat by the thermometer, to make it boil, whereas, water will boil with two hundred and twelve degrees; so that the salt and oily parts of the meat, are made so much more acrimonious by the intenser heat.

and formed into a gelatinous solution, or jelly*. This substance is of a viscid nature, and though it contains much nourishment, yet is difficult of digestion, and, of course, less calculated for diseased or weak stomachs than is commonly imagined. Nor are those jellies, which are the mucilaginous extract of certain parts of animals, as hartshorn, very digestible; indeed, a too liberal use of them has often proved injurious †. They can only be recommended for the sick, accompanied with a quantity of stale bread. To those who require any article of that sort, more especially if their stomachs are weak, simple beef tea, properly prepared, is the most nutritive balsam that can be administered ‡.

It may be also proper to observe, that even after provisions have been dressed in the kitchen, they have often to undergo some operations of cookery at the table: this is principally by the addition of some of the various sorts of seasoning or condiments, the nature and uses of which will be afterwards explained.

One would imagine, that all the various modes of preparing food above enumerated, might satisfy the most luxurious appetite; but, instead thereof, the ingenuity of man has been exerted, to discover a number of other preparations. Hence, a system of refined, or compound cookery has

---

* Some French physicians have recently recommended what they call *gelatine*, or compact animal jelly, as a remedy more efficacious than the bark, in most diseases where that substance is administered; but its powers have not fully answered the expectations entertained. A calf's foot for supper, without any sauce, is found as beneficial as the gelatine. Pinkerton's Recollections of Paris, Vol. I. p. 301.

† Adair's Medical Cautions, p. 197.

‡ Falk's Guardian of Health, Vol. I. p. 177.

has been invented, more flattering to the palate, than favourable to the health.

It would be improper to touch upon processes, which it is impossible for any writer on dietetics, to mention with any degree of approbation. Some dishes may be prepared, variously compounded, which may occasionally be tasted, and plain sauces may be a useful addition to fish and vegetables; but the generality of ragouts, made dishes, and the like, are of a poisonous quality, and cannot be too anxiously avoided, by those who entertain any anxiety for the preservation of their health *.

Before this subject is dismissed, it may be proper to consider the mode of preparing two important articles, namely, bread †, and that valuable root the potatoe.

BREAD.

The subject of bread, is of too extensive a nature to be minutely gone into on the present occasion; but it may be proper

---

* To such a pitch has refined or compound cookery been carried by some at Paris, that their cooks regularly take medicines, in order to preserve the fineness of their palate, that their sauces may be properly composed. Pinkerton's Recollections of Paris, Vol. II. p. 209.

† The best work on the art of bread-making, is a treatise drawn up by Mr A. Edlin, printed at London, one volume octavo, anno 1805. It begins with explaining the natural history and cultivation of wheat; the nature of the corn trade; the analysis of wheat-flour; the analysis of yeast; the theory of the fermentation of bread; substitutes for wheaten bread, &c. On the subject of substitutes, he does justice to the experiments made by the Board of Agriculture: Posterity, he says, will thank them in terms of the highest approbation, for having turned their attention to the great question of substitutes for wheat in the manufacture of bread, and the great variety of experiments they made to ascertain the respective qualities of barley, rye, oats, buck-wheat, maize, rice, beans, and potatoes. It is very improbable, he adds, that such another opportunity will ever occur again.——Edlin's Treatise on the Art of Bread-Making, p. 97. and 98.

proper to give some general remarks: 1. On the various articles employed in the making of bread. 2. On the various modes of manufacturing it. 3. On the various sorts of wheaten bread. 4. On the advantages resulting from the use thereof; and, 5. On the rules that ought to be adopted regarding the consumption thereof.

1. Bread is not only made of all the various sorts of grain, but also of chesnuts, and other sorts of nuts; of roots, as the potatoe, &c.; of fish, dried and ground into meal; of flesh, prepared in the same manner; even of the bark of trees, &c.*. But grain is the proper substance of which bread ought to be made; and wheaten bread is by far the most perfect.

2. Bread may be manufactured in three ways: Leavened, unleavened, and soured. Leavened bread is subjected to the process of fermentation, either naturally, by the addition of some old paste, or leaven, to the new paste, which makes it undergo the fermentative process; or, by the addition of barm or yeast. The first plan is generally adopted in foreign countries, and the second in Great Britain.

Unleavened bread consists of a mixture of meal and water, formed into a firm and tough cake, made as thin as possible to favour its drying; and sometimes with the addition of butter, to render it more soluble, friable, and porous; but it renders the bread more ascescent, and is apt to produce heart-burn. Plain unleavened bread, however, is found of use to weak stomachs, which are much injured by the least extrication of air, when bread ferments a second time in the stomach.

Of the unleavened sorts of bread, biscuit is by far the best, and, in all cases where leavened bread does not agree, it

---

* See Lemery on Foods, translated by Hay, p. 95.—This must be done, not for the sake of nourishment, but for supplying a dry food, and distending the stomach.

it cannot be too strongly recommended. In equal quantities, it is more nutritive than fermented bread; it is also lighter, and less liable to create acidity and flatulence.

In some of the interior counties in England, where their bread is often manufactured from oatmeal, they have a mode of preparing that meal for the manufacture of bread, by souring it, by means of which, the bread, instead of being hard, is of a soft texture, and, from its moderate acidity is, wholesome *. By the same mode, barley-bread has been made; and, with a small proportion of yeast, has formed a species of bread, that might please the most delicate stomach. There is not the least occasion, therefore, when any scarcity takes place here, to introduce such quantities of foreign wheat, when we have grain of our own produce, that might answer the purposes of aliment much better, than the miserable and unwholesome trash which we receive from foreign countries, and by mixture of which our own wheat is so often contaminated.

3. The different sorts of wheaten bread may be considered under three classes; fine bread, coarse bread, and rolls. The finer sorts of bread are certainly the most indigestible, and are best calculated for strong stomachs; they ought only to be consumed, therefore, by the laborious, and not by the luxurious or the sedentary classes of the community. Coarse or brown bread, made of the whole flour, is infinitely preferable for weak stomachs. Rolls, and other sorts of bread commonly used at breakfast, have all the bad effects of new bread, unless they are particularly well fired, and

---

* It resembles what is called sowens, or oatmeal flummery. This article is prepared by letting oatmeal and water stand together till the liquor becomes acidulous, when it is poured off, and boiled to a jelly. Pringle and Blane relate, that, in several instances, the scurvy has been prevented and cured by this preparation alone.

and are therefore to be accounted rather unwholesome. It is said by some, that bread made of different kinds of grain, is more wholesome than what is made of only one sort, as their qualities serve to correct one another. For example, wheat flour, especially the finer kind, being of a starchy nature, is apt to occasion constipation. Bread made of rye-meal, on the other hand, proves often too slippery for the bowels. A due proportion of each, it is said, makes the best bread.

Various reasons are assigned by physicians, for the use of bread in diet. If flour were used with water in a raw state, it would certainly be so viscid, as to clog and cloy the stomach: it is therefore converted into bread, to take off this viscidity. When fermented, it is better calculated to correct the putrescency of animal food; and fermented bread being of a more spongy nature, soaks up the fluids of the stomach, and facilitates digestion *. It is necessary to have something solid in the way of food, which may continue a permanent action on the stomach, when introduced into it, and without which, fluids, however nourishing, are never satisfying to the appetite. The mastication of dry food also, introduces a certain quantity of saliva into the stomach. Without bread, animal food would soon become loathsome to us, from its tendency to putrefaction. It forms a proper medium, to unite the oily and watery parts of our other aliment; and it possesses bulk, without too much solidity, and firmness, without difficulty of solution. We are also told, that bread is the safest of all vegetable aliment, and the best corrector of animal food. Many weak stomachs, that can bear no other vegetable substance, find no inconvenience from this. Hoffman speaks of bread,

as

---

* Easy way to prolong Life, p. 18.

as the principal article in our diet, and what we cannot do without, unless with great injury to our health. Its use is suited to every season, age, and temperament; and, on that account, it may be properly called the universal aliment, *or staff of life;* nor can flesh and other things be easily taken without bread, on account of the disgust they create when used alone *.

5. Many rules have been given regarding the use of bread, in particular the following. 1. Bread should be kept till it is stale; or, if it is consumed when fresh, it should either be thoroughly baked or toasted. 2. The external surface, or crust of bread, is most easily digested; but it contains less nourishment than the softer part, or crumb. 3. Fermented bread should not be given to children, for the first six, eight, or ten months, according to their strength: biscuit-powder, in small quantities, is an excellent substitute. 4. The proper quantity of bread for

---

* Falconer's Observations on Cadogan's Dissertation on the Gout, p. 77.

The celebrated Cadogan affirmed, that bread was not only unwholesome, by its ascescency, but by the strong ferment it contains, it forces into fermentation every thing capable of it, that it meets with in the stomach. This doctrine, of the unwholesomeness of bread, Dr Falconer justly considers as a most dangerous error. The use of bread, of some kind or other, is almost as ancient as the history of mankind, and so universal, that, without some food of this kind, no nation seems to exist. It is necessary, not so much for the sake of the nourishment it affords, as the supplying of a dry food, to draw forth the saliva for blending the oil and water of our meat, and for sucking up the fluids in the stomach, by which the stomach has greater power to act upon them. Without bread, our animal food would be too quickly swallowed.

In regard to its ascescency, it certainly possesses this quality in some degree, but not to such an extent as to become noxious, like other vegetable substances, since it has already passed, in a great measure, through the vinous fermentation, in which the generation of the air, the common cause of flatulence, takes place.—Falconer's Observations on Cadogan's Dissertation on the Gout, p. 73.

full-grown persons, must be regulated by the age, sex, constitution, and mode of life. If a man of active life consume two pounds per day, the half should be sufficient for the sedentary and inactive, and even less for the sick and the invalid. 5. Brown bread is more digestible than the white or fine. The first sort, therefore, is the best calculated for the sedentary and the luxurious, and the second for the laborious classes of the community. Wherever they cannot get the best wheaten bread, they ought to betake themselves to biscuit. 6. If our solid food should be in the following proportion, namely, one third animal food, and two thirds of vegetables; at least one third of the whole should consist of bread.

One of the most important questions on the subject of bread is, whether it should form so great an article of food, with the lower orders of society, as is the case in England? Bread certainly is one of the most expensive modes of using grain, and not adapted to their narrow means, being burdened with two heavy additional charges, when passing through the hands of both the miller and the baker; and, owing to that circumstance, is often adulterated. It has, therefore, been recommended, to use boiled grain instead of bread *. I have found pot barley admirably calculated for that purpose; it is justly entitled to the name of *European rice*, and may be used in the same manner, both simply boiled, or converted into puddings. In addition to this, let the poor use biscuit for any temporary use, when it may not be convenient to dress other sorts of victuals. These articles, with potatoes, would enable the poor to live much more comfortably than they do at present.

---

* Buchan's Domestic Medicine, p. 624.

POTATOES.

Next to bread, there is no vegetable article, the preparation of which as food, ought to be more attended to, than the potatoe; which, if properly dressed, furnishes not only a wholesome, but a most acceptable repast. It is not to be wondered at, that, for a long time, it should not be much relished at the great tables in London, as the cooks were accustomed to soak them in water, and afterwards to pare them, as they did turnips, previous to their being boiled, which deprived them of their best nutritious particles, and rendered them a most insipid and tastless mess. It is a good plan, first moderately to boil, and then to roast them, which gives them, in some measure, a chesnut taste; but as simply boiling them is the most general mode of preparation, it may be proper to give a receipt for that purpose, according to the best plan that has hitherto been carried into practice.

Mode of Boiling Potatoes.

The potatoes should be, as much as possible, of the same size; and the large and small ones boiled separately. They should be washed clean, and rasped, or carefully scraped with a knife, as carrots are; and the eyes, and any earth that remains about them, taken out with the point of a knife. They ought not to be pared, or cut, unless they are of a large size, in which case they may be divided into three or four pieces. They ought then to be put into a pan or kettle, with clean cold water, and well rinsed about. Some recommend their being kept in the water for an hour or two, for the purpose of extracting the black liquor with which they are impregnated. Fresh water is then to be added, but not sufficient to cover them, (unless they are very large), as they will produce themselves, before the process is over, a considerable quantity of fluid. They ought not to be put into boiling water, like greens, but boiled on a brisk fire, *in the most expeditious manner possible*, and in a kettle or goblet, closely covered. When sufficiently done, the water *to be instantly poured off*, and the kettle, containing the dry potatoes, to be placed by the side of the fire, with the cover off, until the steam be completely evaporated, and the potatoes quite dry; they are then to be taken out with a spoon, and put upon a dish for serving up to table The liquid which potatoes contain in a raw state, is certainly unwholesome, and the more they are deprived of that black and offensive juice the better; which cannot be the case, unless the skin is cracked. A moderate scraping of the skins, for which a machine has been invented, is therefore of great service. It is particularly essential, not to allow the potatoes to remain for a moment in the water in which they have been boiled, or else they will infallibly get moist and waxy, and will again imbibe a part of that noxious juice, which the boiling has extracted out of them. There is no better machine for dressing potatoes than an iron pot, and, if made of cast-iron the better. Potatoes may be boiled in salt water, or throwing a little salt into the water is of service. It is known when they are sufficiently boiled, by their beginning to crack, and if a fork will pierce them easily. After they are boiled, they should be sprinkled with salt, and kept for an hour or more on the edge of the fire, so as to be thoroughly drained of moisture. When done in this way, they become white, dry, and flaky like snow, and no food can be more acceptable to a healthy and undepraved stomach [*].

---

[*] See the Farmer's Magazine, Vol. V. p. 191. and 503.

As to the converting them into bread, though that may be effected by various processes *, and more especially with the mixture of different sorts of flour, yet they answer the purpose equally well, without all that trouble. The use of bread, or of the potatoe, is, to form a mass, both to assist in filling up the alimentary canal, and to convey the nutritious particles through the intestinal tubes to the blood. Indeed, unless the alimentary canal is properly distended, the richest food will not nourish an animal for any length of time †. This object may be obtained, either by bread or by any other farinaceous substances, of which there is a great variety, but the potatoe is the best.

OBSERVATION.

It has justly been remarked, that the subject of cookery, and the circumstances on which mixtures of different articles of food are in some cases admitted, and in others are condemned, have never been treated of in a scientific form, nor explained on chemical principles. It is a subject of a very extensive nature, and might be considered under three divisions: 1. As applied to the preservation of health.

2.

---

* M. Parmentier observes, that potatoes contain too much mucilage in proportion to their starch, which prevents them from being converted into good bread. But that if the starch be collected from ten pounds of raw potatoes, by grating them into cold water, and agitating them, and if the starch thus procured be mixed with other ten pounds of boiled potatoes, and properly subjected to fermentation, like wheat flour, that it will make as good bread as the finest wheat.—Darwin's Zoonomia, Vol. I. p. 655.

† A dog has been fed on the richest broth, yet could not be kept alive; while another, which had only the meat boiled to a chip, and water, throve very well. This shews the folly of attempting to nourish men on alimentary powders, and other concentrated food.

2. To the counteracting of disease; and, 3. To the relish of the palate; though the last belongs more properly to the cook, than to the man of science. Such an inquiry would at least be curious and interesting, and might, in various respects, be useful *.

SECT. V.

The Seasoning, or Condiments, with which the various sorts of Food are usually accompanied.

In the more refined periods of society, a number of articles are made use of, known under the name of condiments, or seasoning, which not only answer the purpose of decorations to the table, but are also of service in diet. A general condemnation, therefore, of such articles, cannot be approven of. Pliny says, " Homini utilissimus est cibus simplex, conservatio saporum pestifera, *et condimenta perniciosiora.*"—But he must have alluded to the feasts of Apicius, and other luxurious Romans of those times.

The use of condiments, seems to have been first suggested by a sense of oppresion in the stomach, when languid, and clogged by insipid foods. With food, their uses are various. They sometimes ameliorate the taste of various articles of food; at other times, they correct their noxious qualities, and sometimes they promote the digestion of such articles, and accelerate their passage through the body *.

---

* See Nisbet's Practical Treatise on Diet, printed at London, anno 1801, which is a useful compilation regarding the subject of diet. No writer seems more competent to the task, of drawing up such a scientific work on cookery, as he has recommended in that publication. If such a work is attempted, I think it ought to be extended, not only to kitchen, but to *table cookery*, including the nature and uses of the different condiments, and explaining the medical arrangement of dishes, at what periods the different sorts ought to be taken, and the effects of the mixture of different kinds.

Condiments may be considered under the following general heads: 1. The saline. 2. The sweet. 3. The acid. 4. The hot or spicy. 5. The oleaginous. 6. The miscellaneous; and, 7. The compound.

1. Salt is a very general article at the table. It certainly affords no kind of nourishment, nor will it digest, but it passes unaltered through all the strainers of the human body. It is, however, a useful article in diet, in moderate quantities, though, when carried to excess, it may be injurious †.

It is observed by Haller, that there is something in salt well suited to animal nature, since almost all nations use salt, and many brute creatures, especially those which chew the cud, are fond of it. Its uses seem to be as follow. 1. To the human body it is of service, as stimulating the intestinal secretions as well as those of the mouth and stomach; and for the same reason, it is so much desired by ruminant animals, as their food seems to require a larger flux of liquor from the glandular secretions of their organs of

---

* Doctor Cadagon, Dissertation on the Gout, p. 98, condemns the use of those common decoraments of the table, salt, pepper, mustard, vinegar. He thinks they may be sometimes useful as medicines, but can never add to the wholesomeness of our daily food. Pickles he calls the worst of all poisons. But this doctrine is condemned by Dr Falconer, who contends, that condiments, when united with our food in a proper manner, serve several important purposes in the animal economy: contribute to the proper digestion of our food, promote our most essential secretions, and are more particularly necessary where the food is of an insipid nature. As to pickles, he says that the generality of them can only be considered as so many porous spongy vegetable substances, containing vinegar, which, when properly mixed with animal food, are not indigestible. In this respect, however, the Doctor seems to have carried his defence too far.

† See Darwin's Zoonomia, Vol. II. p. 695. sec. 12.

of digestion, in order to be properly assimilated *. 2. It not only stimulates the fibres of the stomach, but assists in dividing and attenuating the food, and consequently helps digestion. 3. It certainly promotes the solution and mixture of the glutinous and oily parts of our food, and is peculiarly calculated as a solvent for fat meats. 4. It has a tendency to correct ascescency, and, consequently, is a wholesome addition to vegetable food. Hence it is that black cattle, sheep, and horses, are so fond of it. 5. It tends to promote a free perspiration. Persons who, influenced by caprice, or for the sake of experiment, abstain totally from the use of salt, have generally a clammy skin, and their perspiration has an acid or fetid smell. By increasing, however, the proportion of salt they were accustomed to take along with their food, in a moderate degree, they have frequently recovered from want of appetite, indigestion, and other slight disorders of the stomach, and intestinal canal †. 6. It is well known, how insipid various preparations of food, as broths, porridge, &c. would be without it, and how grateful a small portion of salted fish is, to many of those who live entirely upon vegetable diet. Lastly, a moderate use of salt, is very proper to preserve bodies

---

* Query. May not a small portion of salt, be serviceable, on the same principle, to vegetables?

† Buchan's Practical Observations concerning Sea-bathing, p. 142. An eminent lawyer, by the advice of Doctor Woodward, abstained for some years entirely from salt, drank chiefly water, and used freely an animal diet, and by that means acquired a violent scurvy. He was in some time relieved by a strict regimen of diet and medicine, and afterwards used salt and vegetables, with an animal food, drank wine more freely, and never had any return of that complaint. See Barry on Digestion, p. 108. A person who drank nothing but water, and lived freely on animal food, was obliged to take ten times as much salt as any other person, to guard his humours from putrefaction. Ditto, p. 109.

bodies through which it passes, from corruption, and it must, therefore, be of great use, mixed with our blood, in preserving it, and our other fluids from putrescency *.

On this subject, it may be proper to add, that salt is more necessary with fat meat than with lean ; and that it ought to be used sparingly by young, florid, and hale people, as it heats and creates thirst.

2. Sugar is a substance whose taste and properties are well known. It is nutritious, antiseptic, and laxative ; but being of a very fermentable nature, it is apt to produce flatulence, heat, and thirst, in many constitutions. It is mixed as condiment with a variety of articles, as strawberries, melons, &c. Many fruits are preserved in it ; and it is an essential article in many dishes, as tarts, puddings, &c.

That sugar is not unwholesome, (indeed many consider it as the principal source of nourishment), is evident, from various particulars. It has, according to Boerhaave, a saponaceous quality, in virtue of which, it becomes a bond of union between aqueous and oily substances †. It agrees remarkably well with some constitutions, and Slare, in its defence, quotes the celebrated example of Mallory, who was a great lover and eater of sugar, and who, after cutting a fresh set of teeth, at past fourscore, lived to about one hundred years of age ‡.

3.

---

* The use of salt is strongly objected to by Doctor Cleland, in his Institutes of Health, (Appendix, p. 34.), and he states, that the celebrated Boerhaave, after due examination, thought it of no manner of service to the animal economy, and, therefore, recommended that no more of it should be used than may be just required to give a relish. But whoever considers the observations contained in the text, will probably be of a different opinion.

† Combined with fat or oily substances, and taken in quantities, it promotes corpulence, which is not, however, a healthy state. It is found useful in feeding animals, from its fattening qualities.

‡ See Cleland's Institutes of Health, App. p. 38.

3. The use of vinegar, when taken moderately, can neither be improper nor unsalutary [*]. It gives a grateful taste to several kinds of aliment, that would otherwise be apt to pall, and gently stimulates the stomach, so as to excite appetite. It is moderately antiseptic, and probably, by that quality, obviates the putrefactive tendency of flesh diet, and is in that way an antiscorbutic. When in a perfect state, or nearly so, vinegar is safer to use as an acid condiment, than any of the recent juices, as lemon, &c. having already gone through the vinous fermentation. It can have no bad consequences in the blood vessels, as it is easily subdued by the assimilatory organs.

Acids assist digestion merely, and afford no nourishment, unless the juice of sour fruits furnish any. Acids are sometimes employed to create an appetite, and, for that purpose, lemonade is sometimes taken before dinner in hot countries, where, owing to an increased circulation in the skin, the internal circulation is diminished, and of course the stomach weakened.

But the principal use of acids, is, to be eaten with animal food. Thus, lemon or vinegar is an excellent addition to fish; and shell fish, in particular, ought never to be eaten without some acid, being in their nature so extremely viscid, and, without that addition, indigestible and unwholesome. It is for the same reason that we use acids with veal, lamb, and other young animals, namely, to cor-

---

[*] The celebrated Darwin, (Zoon. Vol. II. p. 682.), says, that vinegar, as it contains much vinous spirit, is probably a noxious part of our diet. And the distilled vinegar, which is commonly sold in the shops, is truly poisonous, as it is generally distilled by means of a pewter or leaden alembic-head, or worm-tube, and abounds with lead, which any one may detect, by mixing with it a solution of liver of sulphur. But this is rather an objection to the manufacture, than to the article itself.

rect their viscidity. We also eat vinegar with substances of a loose texture, that are apt to turn sour on the stomach, and to become windy or flatulent; for instance, it is used on that account, with salad and greens; but, though a small quantity may thus be of service, yet if the due proportion is exceeded, acids become extremely hurtful, producing a disposition to flatulency, pain, and sickness in the stomach, which is afterwards cured with difficulty *. Though vinegar, however, may in many cases be approven of, pickles cannot, being more indigestible, and furnishing no nourishment whatever.

The French use vinegar more liberally than we do, and it is a very proper sauce for their meats, which they generally eat in a putrescent state. Their vinegar is much more genuine than ours, which is generally adulterated with oil of vitriol †. Of all acids, vinegar, provided we attend to its quality, is the safest.

4. The hot or spicy condiments form a numerous tribe. They are powerful stimulants, that is to say, they increase the action of the stomach. And, as digestion partly depends upon the contracting power of the stomach, when that organ is weak, it is necessary to have some article that will stimulate it to action. Of these articles, the different kinds of pepper may be considered as the chief, and they are of the greatest service in the warm climates, to enable the body to resist, and support the exhausting influence of the sun. In mild climates, however, they are less required;

---

* Too free a use of vinegar, however, is certainly destructive to the stomach; and, by the abuse of that article, when slenderness of waist was particularly in request, many women totally ruined their digestive faculty. The nitrous acid is a much safer prescription. Beddoes's Hygëia, Vol. II. Essay VIII. p. 50.

† Adair's Medical Cautions, p. 229.

required; and though used with greens and other vegetables, to correct their windiness, yet, on the whole, they are better fitted for languid and debilitated stomachs than those of a hale and sanguine habit *. The Cayenne is the most stimulating of all the peppers. But many consider capsicum and Cayenne pepper, in moderation, to be the best and safest article of the sort, the stimulus from them being temporary, whereas that from East India spices is more permanent, and found to be exceedingly hurtful in many constitutions. Ginger is an agreeable and wholesome aromatic, preferable to most other spices, as possessing little acrimony, and consequently, rarely known to irritate and inflame. Cinnamon is a delicate and wholesome spice, and is much used for procuring a grateful and agreeable taste to various kinds of aliment †. The clove is a hot and stimulant aromatic, having a smell peculiarly grateful; and is considered to be, in various cases, a useful stimulus to the stomach, and system in general. The nutmeg is a strong pungent aromatic, of an agreeable flavour, but the least wholesome of all the spices, the essential oil which it possesses, being of a narcotic nature. Mace, which is the skin or covering that immediately invests the nutmeg kernel, possesses the same general properties. Cardamoms, cubebs, and other spices but little in use, need not be dwelt upon.

---

* Pepper is probably the most exceptionable of all the condiments. It may be proper to take it with vegetables, but to use it with animal diet is undoubtedly superfluous, and probably prejudicial. Indeed, spicy stimulants, in general, when carried to excess, deprave the organs of digestion, and provoke the stomach to crave more food than it can properly digest.

† Powdered cinnamon, however, ought to be cautiously taken by people of weakly habits, as it is apt to occasion costiveness.

On foreign spices, in general, it may be observed, that they are all the products of hot climates; and, therefore, more suitable condiments in those countries than in this; a fitter addition to vegetable than animal foods; and more proper for languid and debilitated constitutions, than those of a hale, sanguine habit *. It is also to be remarked, that they are better calculated in this country for summer, than for winter, more especially with flatulent vegetables, as greens, peas, &c. with a view of increasing the action of the stomach, and to bring on digestion before that fermentation takes place, which, in weak stomachs, would be attended with extrication of air.

There are three articles, however, of a hot nature, produced in this country, and in great perfection, which ought not to be omitted; these are, mustard, horse-radish, and caraways. The two former, are less stimulating than spices, and are therefore employed, with greater safety, as condiments, in temperate and cold climates. They are chiefly employed along with animal food, but may also be used with vegetables. They not only stimulate the stomach, and assist digestion, but also promote perspiration, and the other secretions, and obviate a putrescent tendency in the system; hence they are best suited to be used with animal food, as the aromatic spices are the proper condiments for vegetable.

The use of mustard is extremely ancient. Hippocrates mentions it in his treatise of diet, and Aretæus recommends it to be taken liberally in that way, in cases where other stimulants are forbidden; and is very lavish in his praises of it, for its good effects in expelling flatulence, and promoting digestion. In France, where they pay such particular

---

* Adair's Medical Cautions, p. 229.

cular attention to every thing connected with the table, mustard is celebrated as by far the best of all the stimulants, as agreeing with every species of food, promoting digestion, augmenting the elasticity of the fibres, increasing the dissolving juices of the stomach, and doubling their force; and particularly calculated for the aged, or those whose stomachs and bowels are weak or embarrassed with viscid matter*.

In regard to the caraway, among all the native spices, there is none which excels it in medicinal virtues. The seeds of this plant are the mildest and most useful carminative we possess. To people of a weak digestion, troubled with flatulency and colics, they will often afford relief, if used in sufficient quantity; for instance, a table-spoonful at a time, early in the morning, and an hour before a meal; or still better, if these seeds are plentifully used in bread, and among cooked victuals. Yet those of a hot and bilious temperament, and individuals liable to obstructions, and habitual costiveness, ought not to use these seeds indiscriminately, nor without consulting a professional man.

Caraway-seeds, finely pounded, with a small proportion of ginger and salt, spread upon bread and butter, and eaten every day, especially early in the morning, and at night, before going to bed, is successfully used in Germany, as a domestic remedy against hysterics.

If caraway is kept in a pounded state, it soon turns rancid, on account of the strong oil it contains†.

The plants of the garlic kind, so often used as condiment, have already been taken notice of, amongst the articles

---

* Almanac des Gourmands, 2de année, p. 93.

† Willich's Lectures on Diet and Regimen, p. 431.

ticles of vegetable diet. In regard to the spicy sweet herbs produced in this country, as thyme and sage, they are principally used as condiments in soups and broth. In small quantities, they give energy to the digestive organs, especially in phlegmatic and corpulent subjects. They are also less liable to adulteration than foreign spices; but, if taken too freely, they are apt to excite heat and thirst.

5. Salad oil is the chief of the oleaginous condiments, and in the countries where it is produced in perfection, the consumption is very great, answering the purposes of butter. It is of a mild and bland nature, with little odour or taste. When used in salads, or as a seasoning for raw vegetables, it checks their fermentation in the stomach, and thereby prevents them from being too windy or flatulent. When thus employed in small quantities, it assists digestion, but, when taken in large quantities, it cloys the appetite, and lays a foundation for bilious complaints, more especially with weak stomachs.

Melted butter is another oleaginous condiment. It makes a proper, and not an unwholesome addition to boiled vegetables, and to various sorts of fish, but it frequently disagrees with weak stomachs, more especially when the quality of the butter is bad, or when it is improperly melted.

It would appear, from Dr Stark's experiments, that excess in the use of oleaginous substances, is more hurtful to the body, than an excess in any other article of food, and that we ought to be particularly careful, in regulating the quantity and quality of the oils we employ in diet *.

6. The miscellaneous condiments consist of two articles, olives and cheese.

Olives

---

* The Works of William Stark, M.D. p. 143. Oily substances, however, are of great use to the body. See that subject explained in Falconer's Observations on some Articles of Diet and Regimen, p. 25, 26, &c.

Olives may be considered as a condiment with us, but they are a food in their native soil. They are best in their pickled state, as they then lose much of their bitterness and acrimony. From their oily nature, they are improper for delicate stomachs.

Old cheese is highly alkalescent, and, therefore, a good condiment, after a dinner of insipid meats.

7. There are various combinations of the condiments above detailed, with other articles, but the two principally used are known under the names of catchup and soy. The first is prepared from the juice of mushrooms, submitted to a putrefactive fermentation, and in that state, salt, vinegar, and aromatics, are added to it, when it becomes fit for use. Soy is a preparation from seeds produced in the East Indies, submitted to fermentation in a strong solution of common salt. It possesses, therefore, a saline taste, with little aromatic flavour. Both these articles are better calculated to please the palate, than to promote health.

It is justly remarked, that seasonings and sauces ought not to be much indulged in by young stomachs, and strong healthy bodies, who require no spur to their appetite, nor help to digestion. But these helps should be reserved for age, deficiency of stomach, and other infirmities, otherwise that benefit and assistance will not be received from them, which might have been experienced, had the use of them been forborn when they were not necessary *.

Under the head of condiment, perhaps *the use of ice* may be included, as it gives a relish to our liquid food, and is a kind of seasoning to fruit. On this subject, it may be observed, that though, in some countries, and for some constitutions, the prudent and moderate use of ice may occasionally

---

* Mainwaring on the Preservation of Health, p. 63.

sionally be proper, yet, in general, it produces more injurious than beneficial effects. In the southern parts of Europe, as in Sicily, where the inhabitants, on account of the heat of their climate, are every year liable to malignant fevers, it has been found that such disorders may, in a great measure, be prevented by the use of ice, by means of which, the violent motions of the blood and humours are prevented *. But even in those countries, drinking out of ice has often proved fatal †. In regard to the more temperate climates, as those of France and England, though the inducement is not so great, yet luxury, however, has introduced the use of iced liquids, and of various sorts of ice creams; and in moderation, they may be admitted, but they ought never to be taken when the body is warm. Every thing in extremes, is an enemy to nature; and it cannot be safe, to throw the body, all of a sudden, when it is hot, into a quite different state, by taking into the stomach, things which are excessively cold ‡.

On the whole, the subject of condiment, is both curious and important; and it may be observed, that these seasonings, when taken in small quantities, merely to give tasteful-ness,

---

* See Lemery on Food, translated by Hay, Part III. cap. 1. p. 328.

† Gonzages, Duke of Mantua, was killed by drinking out of ice. Ditto p. 327. Brueyrinus, Lib. XVI. de re cib. cap. 9.

‡ See Valangin on Diet, p. 115. This intelligent author then mentions the case of a nobleman, whom he describes as being in every respect a manly character. He was a great advocate for the cold bath, and, in general, for every thing that could harden the body; and imagined that cold, *applied internally*, must be as salutary as when applied externally. He often drank his liquors out of ice, and eat plentifully of ice-creams of various kinds. After having one day taken a greater quantity of these than usual, a fatal inflammation, which at once affected the stomach, the intestines, and the kidneys, notwithstanding the assistance of three of the most eminent physicians, who did not leave him an instant, made him fall a victim to this his favourite opinion.

ness, or sapidity to the food, certainly have a tendency to increase the appetite, to favour a proper quantity of aliment being taken, and to promote digestion; but where they are taken immoderately, they cannot fail to weaken the stomach, to occasion acrimony in the fluids, and to produce a general irritation in the whole system.

SECT. VI.

The Times of Eating, and the sort of Food best adapted for each Meal.

THERE is nothing that proves more clearly, that man is the child of custom, than the various systems which have been adopted, regarding the times of eating, and the number of meals per day. Some recommend no regular plan whatever, but to eat when one is hungry, and to drink when one is dry; but this rule can only be adopted in very particular circumstances, where individuals live alone, have nothing to think of but themselves, and have a diet prepared for the purpose. They may then indulge their appetites when they think proper *. In all numerous families, however, regularity, in this respect, is indispensable.

Besides, there is nothing that nature more delights in, than in having stated periods for carrying on its operations. If the stomach is accustomed to receive liquid or solid food, at a particular hour, it will feel the want, if deprived of it, and the body must suffer in consequence. It may, also, thus get into the habit of a regular time for evacuation, a point of infinite consequence *.

---

* Dr Franklin knew a gentleman who had been a slave in Barbary, and was allowed only a certain quantity of barley, which he took with him every morning to the quarries where he was employed. He there found water to drink. His practice was, to eat a little now and then, whilst at work; and, having remained many years in slavery, he had acquired so far the habit of eating frequently, and little at a time, that, when he returned home, his only food was gingerbread nuts, which he carried in his pocket, and of which he eat from time to time. The Works of William Stark, M. D. p. 92.

Indeed, the filling of the stomach at stated intervals, to a certain degree, with food, seems necessary to the health of the human frame, not merely on account of the nourishment it supplies, but also of the tension thereby produced on the fibres of the stomach, which is from thence communicated to the system, and serves also to excite such a degree of reaction in the stomach itself, and alimentary canal, as to enable it to digest the food, and distribute the nourishment properly through the system †.

Man also is a social animal, and when there is abundance of food, he relishes it much more, when he partakes of it in company with others, than when he devours it in a cold and melancholy manner by himself.

Those who are young, and in a state of perfect health, may take liberties as to diet, both in regard to time and quantity. But when persons become advanced in years, and the body becomes infirm, a certain, habitual, approved, and wholesome, mode of living ought to be adopted, and followed

---

* If we breakfast, dine, or sup, at stated hours, for some length of time, we naturally look forward to those hours for refreshment, and suffer a temporary disadvantage, if our expectations are not then gratified. The body, having accustomed itself to expect repletion at such time, and completed the functions necessary for its reception, if it is supplied with food, the secretions are performed with greater ease, and a regular period for evacuation may be obtained. It is a fact, that the mind and the body may, by habit, be brought to get so far in unison together, as greatly to assist each other. Taylor's Remarks on Sea-water, p. 61.

† Falconer's Observations on Diet and Regimen, p. 9.

followed out from day to day, periods of disease alone excepted *.

It may also be observed, that a number of meals, furnish the means of occupation and amusement, without which, life itself would seem dull and uninteresting. Under proper restrictions, therefore, it is a mode of employing time, that might otherwise hang heavy, or be devoted to worse purposes.

On all these gounds, having stated periods for taking food, is greatly to be preferred, at least in civilized society, to indiscriminate and irregular eating †.

But, though regular meals are desirable ‡, it has been much disputed, how many should take place in a day, some preferring one, some two, some three, some four, and some even five meals, daily.

The diversity of constitutions §, ages, sexes, divers climates

---

* See Kant's Treatise on the power of Resolution over Disease. Code of Longevity, Vol. III. p. 254. Those who have weak stomachs, as Darwin justly remarks, Vol. I. p. 454. will be able to digest more food, if they take their meals at regular hours; because they have both the stimulus of the aliment they take, and the periodical habit, to assist their digestion.

† We are told of some tribes in ancient times, who had no prescribed times for eating, and took no victuals but when they found themselves hungry; but this was generally owing to the great scarcity of food, which obliged them to study abstinence.

‡ The periods of hunger and thirst become catenated with certain portions of time, or degrees of exhaustion, or other diurnal habits of life. And if the pain of hunger be not relieved by taking food at the usual time, it is liable to cease till the next period of time, or other habits recur. Darwin's Zoonomia, Vol. I. p. 454.

§ Bilious people, with a boldness of temper, and inclined to anger, cannot endure fasting; for the bile, with which they abound, is a strong, sharp, and stimulating dissolvent, which should always have something to act upon. It is, therefore, advisable for them to eat often, and little at a time, or to take four meals a day. Valangin on Diet, p. 146.

mates and customs, will make a surprising difference in this respect; and the number of times a person should eat in a day, ought to be determined by the age, strength, appetite, quantity of food he takes at a time, and its quality, as to its easy or hard digestion.

It is an important rule in modern life, not to make the distance between the meals too great. The body will thus be regularly supplied with nourishment *, and no unusual craving or debility will ensue.

As it appears from experiments, that food rarely remains longer than six hours in the stomach, our meals ought to be regulated by this circumstance; an early breakfast and dinner, will enable us to make an early supper; and, by this means, the extremes of repletion, and long fasting, may be avoided †.

Some nations have been satisfied with one meal a day. But the stomach would this be oppressed with too great a quantity of food, and, in the interval, would suffer from the want of some nourishment in the stomach. Indeed, such a plan is neither calculated for persons of a strong constitution, and engaged in much labour and exercise, who require large supplies, and far less to those of a weak constitution, who are neither able to *take*, or to *digest*, such a quantity of nourishment in a single meal, as will be sufficient to supply the *wastes* of the body, and more *equally* to support the strength and spirits for twenty four hours ‡.

---

* Many suffer from irregularity of meals, more especially those who are concerned in great public affairs; as the judges, the members of both houses of Parliament, &c. They are so taken up with these weighty concerns, that they cannot find a moment's time to take any nourishment for many hours, and almost for a whole day. Valangin on Diet, p. 151.

† Adair's Medical Cautions, p. 260.

‡ Barry's Observations on the Wines of the Ancients, p. 234.

Celsus recommends it to the healthy, to take food rather twice in the day than once [*]; and, indeed, there are few who take solid, or at least animal food oftener.

The Romans, in the most luxurious periods of their empire, took five meals a day; a breakfast *(jentaculum)*; a dinner, a light meal, without any formal preparation *(prandium)*; a kind of *tea*, as we would call it, between dinner and supper *(merenda)*; a supper, which was their great meal *(cœna)*; and a posset, or something delicious, after supper *(comissatio)*; and sometimes, a kind of lunch *(gustatio)*; but, in that case, one of the preceding meals was probably omitted [†]. The supper, however, was the great meal, which consisted of two courses, the first of meats, the second seems to have been what we would call a desert.

The English, of old, had four, and sometimes five meals a day [‡]. They breakfasted early; they dined about 11 or 12 o'clock, and had at least two meals after. One of the maids of honour at the Court of Henry VIII. had five meals a day, three of them with meat [§]. But such frequent eating could only suit those who had strong stomachs, took a great deal of exercise, and were much in the open air. In regard to four or five meals a day, such a plan cannot possibly be approven of, though some latitude may be given to old people and to children, who require repeated supplies; the first, eating but little at every meal, ought to do it the oftener; and the second, on account of their growth, stand more in need of recruiting than others.

---

[*] See Grieve's Celsus, Cap. I. p. 23.

[†] Adams's Roman Antiquities, 4th edit. p. 434, and 447. The more temperate, however, according to Athenæus and Plutarch, Lib. VIII. Simpos. Quest. 6. took only three meals a day.

[‡] Dr Mouset gives the following curious description of the old English style of living. If our breakfast, (he says), be of liquid and supping meats, our dinner moist, and of boiled meats, and our supper chiefly of roasted meats, a very good order is observed therein, *agreeable both to art, and the natures of most men.* See Health's Improvement, printed at London, An. 1655.

[§] See the bill of fare, Adair's Medical Cautions, p. 275.

Some are not satisfied with a number of meals in the day, but fill up the intervals with a variety of supplementary articles, as soups, jellies, sago, and other articles of culinary physic, under the idea of their being wholesome; and sometimes with quack medicines, stomachic, cephalic, analeptic, and the like; so that the stomach is never empty, and, of course, cannot duly perform its office of digestion, nor supply the animal machine with proper nourishment in a regular manner. No wonder, therefore, that persons who follow such a system, should feel languid and oppressed, instead of being recruited and invigorated by a hearty dinner *.

Having premised these general observations, we shall now proceed to consider the subject of meals, according to the usage of modern times, under the following general heads. 1. Breakfast. 2. Dinner. 3. Supper. 4. Intermediate meals. 5. Rules to be observed at meals; and, 6. Subsequent to them.

1. *Breakfast.*—In the morning, the body, though refreshed by sleep, yet must often feel weak and languid, from the long period of fasting during the night. A supply of nourishment, therefore, should be thrown in at breakfast, one, two, or three hours after we get up, according to the hour of rising. The solidity of this meal should be regulated by the labour or exercise to be taken, and the time of dining. Considering the lateness of the dinner hour, according

---

* See the Invalid, by A. Nonagenarian, p. 4.

ing to the modern fashion, the breakfast should be made a more nutritious meal than it generally is *, and rather resembling the Scotch than the English fashion, or what the French call *a fork breakfast*, (un dejeuner à la fourchette), as that implement is necessary where animal food is made use of. It should be a constant rule with persons in a weak state of health, to take, if possible, some animal food at breakfast.

It is the more necessary to take animal food at breakfast, as it would greatly tend to obviate the objections to the use of tea or coffee at that meal, a custom which has been so long established in this country, that it is not likely to be changed, unless some commercial convulsion were to take place; and if these articles are taken, with a proper proportion of cream and sugar, more especially if animal food is added, they may be used without any material injury to the constitution †.

With respect to the bread at this meal, it should be either stale or toasted, or used in the form of biscuit. The addition of unmelted butter with the bread, is to be recommended with tea and coffee, but not with chocolate or milk. The butter is improved by being a little salted, otherwise it soon becomes rancid and unwholesome.

Breakfast may be said to be the most natural of our meals, and that for which a temperate person ought to have

---

[*] What a contrast, as to the breakfast, between the ancient and modern times? A maid of honour, in the Court of Queen Elizabeth, breakfasted upon beef, and drank ale after it, whilst the sportsman, the mechanic, and even the day-labourer, now breakfast on tea. Adair's Medical Cautions, p. 256.

[†] The celebrated Boerhaave refused to write against tea. 'Can you produce,' said he, 'an instance of men taking so cordially to any other liquor, not of an intoxicating quality?'

have the greatest relish; because, as many hours have intervened from the last meal, and as sleep and perspiration are favourable to digestion, if that has gone on properly, we ought to have a keen appetite for breakfast, otherwise we may be assured that some error has been committed, in the quantity, or the quality of our preceding meals *.

Some have recommended *a dry breakfast*, as peculiarly wholesome; and this plan is sanctioned by the example of the celebrated Marcus Antoninus, who was accustomed to eat a hard biscuit, for his breakfast, the moment he got up. This practice is said to be of use in catarrhous defluxions, occasioning a copious admixture of the saliva, and absorbing the night-remains of unconnected phlegm in the stomach †.

In Scotland, it is not unusual to have what is called marmalade at breakfast, or the rinds of the bitter orange preserved with sugar. Owing to its bitter quality it promotes digestion. The practice, also, of eating this preserve at breakfast, may tend to qualify the enervating effects of tea; nor are eggs an improper addition to this meagre meal ‡.

Milk thickened with rennet, called in the western counties of England *junket*, when the whey and curd have not been separated, is an excellent breakfast §.

Infusions of balm or sage, or chamomile tea, at breakfast, are improper: a constant use of aromatics or bitters being very injurious to the stomach ‖.

---

* Adair's Medical Cautions, p. 258.

† Cleland's Institutes of Health, p. 42.

‡ Adair's Medical Cautions, p. 212.

§ Beddoes's Hygëia, Vol. II. Essay VIII. p. 67.

‖ Adair's Medical Cautions, p. 323.

The celebrated gourmand Grimod, condemns the *dejeuner à la fourchette*, but recommends chocolate for breakfast, particularly to old people; and above all, a new kind, called *le chocolat analeptique*, which is made with salep, instead of the cocoa nut *.

2. *Dinner.*—Among the Romans, dinner was regarded, by healthy and temperate persons, rather as a refreshment, to prevent any uneasy sensation to the stomach from fasting, than as a meal, or source of nourishment. It consisted chiefly of some light repast, without any animal food or wine †. But, in modern times, it is accounted to be the most important action of each day; and no wonder that it should be considered in that point of view, if M. Grimod's opinion is well founded, that five hours at table, *is a reasonable latitude for dinner*, when the company is numerous, and the feast abundant ‡. The hour of dinner is now so much protracted, that it resembles the suppers of our ancestors. This procrastination, however, is objected to. We should not allow, it is said, a long space of time to intervene between breakfast and dinner; not only because long fasting is injurious, but as we may thence be induced to eat more at this principal meal than can be properly digested §.

The progress of digestion, it is contended, is generally completed in from three to five hours, according to the strength of the stomach, and the nature of the food; and every meal should succeed each other at nearly that dis-

tance

---

* Almanac des Gourmands, 2de année, p. 47. This article should be introduced into England.

† Barry on the Wines of the Ancients, p. 236.

‡ Almanac des Gourmands, p. 123.

§ Adair's Medical Cautions, p. 259.

tance of time. The modern fashion, therefore, of protracting the principal meal, that of dinner, to a late and unusual hour, destroys the tone of the stomach, and proves the source of many of those dyspeptic or stomachic complaints, which affect men of business, and those in the higher ranks of life; and the meal also is more indulged in, than if it had taken place at an earlier hour; the stomach, in consequence becomes over distended; the process of digestion is not completed at the hour of repose, and a restless night, and an unpleasant morning, are the necessary consequences [*].

As every species of luxurious gratification, or what in France is called the *sçavoir vivre,* together with the *iatrical,* or medical arrangement of dishes, have been carried to greater perfection in that country than in any other, (in so much, that it is said, the cooks must have consulted intelligent and beneficent physicians in that arrangement), it is proposed, therefore, to give a short account of the dinner in France, extracted from the author who has most recently discussed that subject [†].

A great dinner, according to Grimod, in his Almanac des Gourmands, (whose opinion is considered to be conclusive in such matters), ought to consist of four services: 1. The soups, the *hors d'œuvres, relevés,* and *entrées.* 2. The roast meats and salads. 3. The cold pastry and *entremets;* and, 4. The desert [‡].

In the winter, a good French dinner often begins with oysters, which are uniformly accompanied with white wine, especially Chablis, particularly agreeable on that occasion. The use of red wine with oysters, would show a great want of *sçavoir vivre,* and is even pernicious to the health, as it generally produces indigestion.

---

[*] Turnbull's Medical Works, p. 40.

[†] Pinkerton's Recollections of Paris, Vol. II. p. 102, 211.

[‡] Ibid. p. 211.

There is no French dinner without soup at the commencement, which is regarded as a necessary preparation of the stomach, for the due digestion of more solid food *. It is commonly followed by a libation of ordinary wine, the *coup d'après,* which is considered so wholesome after soup, that the proverb says, the physician thus loses a fee.

The soup is constantly followed by boiled beef, or the *bouillé,* which is, however, sometimes preceded by anchovies, to stimulate the palate and appetite.

Small plates of radishes, eggs, &c. with butter of Bretagne in little pots, form what are called the *hors d'œuvres,* or extraordinaries; but the delicious pastry called *petits patés,* have an almost exclusive right to follow the boiled beef.

The *hors d'œuvres,* are followed by *entrées* of fowl, in various shapes, fricassees, fricandeaux, cutlets, sweetbreads, &c.

The vegetables are served apart, and eaten by themselves.

A great singularity of the French table is, that fish is served last, at least at all moderate and daily tables. Sometimes fish dressed warm, may be eaten in the course of the second or third service; but the fish is often cold, and follows the roti. This custom is said to be more agreeable to the stomach, than our fashion of beginning with the fish, which the French consider to be a crude food, of little nutrition, and often of difficult digestion, not being much acquainted with the better sorts produced in other places.

---

* It serves also another purpose, that of filling the stomach, and preventing excess in the use of solid animal food.

In consequence of this arrangement, and the aid of a variety of the most generous wines, that France, Spain, Hungary, or other countries can produce *, the consumption of the table is very great; and, it is said, that a person who leaves England with so weak a stomach, that it has long refused the luxury of two dishes, may, without inconvenience, taste of twenty at a French repast.

All this must be very acceptable to those to whom the pleasures of the table are a favourite, and perhaps a pre-eminent object; but it cannot ultimately tend to promote health or longevity.

3. *Supper.*—In the times of Queen Elizabeth, the nobility and gentry were accustomed to dine at eleven, to sup between five and six †, and to go to rest at ten. Hence they could comply with that well known advice, *after supper walk a mile*, in order to quicken digestion, and dispose the body for rest. But as our dinners are now prolonged to five or six, the supper is generally given up ‡. Some

---

* The use of *liqueurs*, or ardent spirits at dinner, is not generally recommended by the French. The dram immediately before dinner, so usual in Russia, &c. what they call *le coup d'avant*, they consider only calculated for the stomachs of those northern climates. *Le coup d'après*, or a glass of pure wine after soup, they think an excellent practice; also, *le coup du milieu*, or a glass of Jamaica rum, &c. between the roasts and the *entremets*, to give a fresh stimulus to the appetite. Almanac des Gourmands, 2de année, p. 24, 25, 195.

† Hume's History of England, Vol. IV. p. 464, Note S.

‡ The ancient physicians, Hippocrates, Celsus, and Galen, were all in favour of light dinners and substantial suppers, alledging that foods are sooner, and more perfectly digested, when we are asleep than waking, and that the space between supper and dinner is double of that between dinner and supper. But it has been properly answered, that when we are asleep, foods float less in the stomach, and that the animal functions are in a great measure at rest. It is also to be observed, that we waste much less when we are asleep, than when we are awake and in motion.

slight repast, however, is generally prepared, as eggs, milk, or vegetables. To invalids, boiled sago, or other articles of the same sort may be given. In favour of light suppers, it may be observed, that Cardan said, he had conversed with many persons who had lived to be an hundred years of age, and who all declared to him, that they made it a rule to eat little at night.

If breakfast is the meal of friendship, dinner that of etiquette, and the luncheon that of youth, the supper may be called the feast of wit and of love ; at least the delicious suppers for which Paris was formerly so much celebrated, were entitled to that description, when every thing the most amiable in that great metropolis, all the elegance of the court, all the talents of the learned, and all the beauty of the fair, were united together, in the luxurious sanctuaries, of splendid opulence *.

In regard to suppers, in general, it may be observed, that though the laborious ploughman may indulge with impunity, in a plentiful supper, yet indolent persons of fortune, whose dinner cannot be completely digested, must be oppressed by it : hence interrupted sleep, and a determination of the blood towards the head. Instead of a supper, therefore, any good ripe fruit of the season would be very salutary, preventing costiveness, and keeping the bowels free and open ; also cooling, correcting, and carrying off the heats and crudities of former indigestions †.

---

* Almanac des Gourmands, p. 65.

† Cadogan's Dissertation on the Gout, p. 93. At the same time, persons who have not been accustomed to fruit, have been prevented from sleeping, by eating apples or pears a short time before going to bed. Some have recommended a tumbler of negus made with Madeira, or any kind of white wine, with a scrape of nutmeg, or a little pounded cinnamon, and a thin well toasted slice of fine bread, as an excellent supper.

Lettuce also has been recommended from its soporific qualities.

4. Many persons avoid eating between breakfast and dinner, on the supposition that it would spoil their appetite for that favourite meal, even though the interval is sometimes eight hours *. This is very injurious, particularly to invalids. Persons with weak stomachs should never fast, in the day time, above six hours, more especially if acid abounds in the stomach. It is an excellent practice for persons of that description, to take a little soup, with toasted bread, about one or two o'clock. By taking food frequently, the stomach is less oppressed, and performs its office more completely;

Thin, emaciated, or worn out persons, have been advised to drink half a bottle of mild Burton ale, or other fresh, and even newish liquor of the same sort.

* Strong objections have been made to the modern system of meals, and the following observations upon that subject, coming from the pen of the Reverend Dr Gregory, merit attention. In a communication to the author of this work, he observes,—' There is one circumstance I cannot omit in this case, because I am convinced, it deserves most serious consideration. The late dinner hours of persons of fashion, I am convinced, are destructive of both health and longevity. Our wiser ancestors divided the day into nearly equal parts, by the principal meal. Several good effects were the consequences of this arrangement. The stomach was not left empty by a long fast, and the gastric fluid was not left to act upon the coats, possibly the nerves of the stomach, and destroy its tone; but what is of more consequence, long sittings after dinner were not indulged in; but all the gross effects of this meal, (if there were any), were wrought off, and digestion promoted, by wholesome exercise. From my own experience I can aver, that moderate exercise, is a greater promoter of digestion, than rest; and I think I could assign physical reasons for it. As it is, see what are the consequences—they are either a long fast, or that another meal is added in the course the day, and a long sitting and intemperate use of wine indulged in during the afternoon and evening. I do not think that it is well to sleep with the body overcharged, as it is in the progress of this regimen. Hence the frequency of these diseases caused by what Brown terms indirect debility, and particularly apoplexy and paralysis.'

completely; the fever of digestion is diminished, and too much chyle is not sent into the circulation at once, which, by its stimulus, excites a kind of temporary fever, which certainly retards the nourishment of the body. Such a slight repast also has a tendency to prevent repletion from excess *.

The *gouter*, as it is called in France, is more usual in the country than at Paris; and is considered more necessary for young people, who must eat frequently, than to those of a more advanced period in life.

The meal called *tea*, is principally of use, as tending to put an end to the destructive practice of sitting too long at table after dinner; and either tea or coffee, when properly prepared, must be more favourable to digestion, than strong or intoxicating liquors †.

---

* Adair's Medical Cautions, p. 328.

† A noble friend of mine, (David Steuart Erskine, Earl of Buchan,) has communicated to me the following interesting observations, on the subject of coffee.

Coffee is a charming liquor: Voltaire pretends to say, from some philosophical legend, that the Arabian devotees first discovered its efficacy to dispel drowsiness, and to exhilarate the spirits, by the playfulness of the goats, who browsed upon the berries of the coffee-shrub, in the mountain country of Arabia the Happy!

Let Voltaire and philosophers dream as they please, concerning the cause of coffee being first used, and let me consider how coffee may be best prepared in my dear Scotland, and that the complaints of a Faujas de St Fond, and of all foreigners who visit Britain, may be removed; and that we may sip good coffee here, instead of barbarously forsaking the drawing-rooms of the ladies, to sip artificial port and claret in the parlour.

The first point respecting coffee is, to obtain good berries, (which we improperly name beans), from the mountainous regions of Jamaica, Martinico, or St Domingo; but most of all, from the land of coffee in the east.

2dly, The next point is to roast the beans, by a gradual application of heat, scorching, but not burning the berries, keeping the roasting instrument all the time, and thereafter excluded from evaporation in the air.

3dly,

It was formerly a custom in England, after their early suppers, to have what they called *a posset*, consisting of milk, bread, and eggs, sugar, and spice, and some sorts of liquids *. But that custom is now happily exploded.

5.

3dly, Next, we are to pound the beans with a pestle and mortar to an impalpable powder, not grinding them with a coffee-mill, as is usual, when they remain gritty, and unfit to afford a perfect tincture by boiling.

4thly, A matrix is to be made to go into the coffee-pot, a model of which Dr Griffiths brought from the east, and imparted to the Earl of Buchan, who gladly imparts it to his fair countrywomen.

Dr Griffiths has, in his eastern tour, given to his readers some account of coffee-making, of which the following is a transcript: It were hard upon the ladies to pay a guinea and a half for making a dish of good coffee for their husbands and their company.

Turkish or Arabian mode of preparing Coffee.

" The coffee ground, or beaten to an impalpable powder, is preserved by closely pressing it down in a wooden box; and the quantity required for use is scraped from the surface of the mass by means of a wooden spoon. Two small coffee pots are employed; in one is boiled the water, generally mixed with the remaining coffee of a former meal; in the other is put the fresh powder, which is sometimes placed near the fire, to become heated before the boiling water is added to it. The mixture is then boiled two or three times, taking care to pour a few drops of cold water upon it the last time, or to place a cloth dipped in cold water over it, then it is allowed to subside, and afterwards poured into the coffee pot, which contained only the boiling water.

" N. B. The quantity of coffee powder necessary to make a fine strong tincture of coffee, may be estimated at one coffee cup of coffee powder, to three dishes of proper coffee liquor for the table."

Thus have I, in the sixty-fourth year of my age, contributed my mite to polish the manners of my age and country, by making the parlour pay its kind good offices to the ladies, and to the withdrawing room. An homage not injurious to jollity or innocent mirth; but, on the contrary, tending to detain the ladies in the dining-room; and in half an hour after they leave the coffee and the gentlemen, they are to expect their friends to partake of the fragrant tea-table, of cards, of conversation, and of sounds that lift the soul to heaven.

Edinburgh, 20*th March* 1806. BUCHAN.

* Hart's Diet of the Diseased, p. 38.

5. *Rules at meals.*—It is much disputed, with what sort of food, whether liquid or solid, meals ought to begin; but, on the whole, it appears most advantageous, to begin with the most liquid, and those which are easiest of digestion, as the lighter sorts of fish, according to the English practice. The first having an easy passage through the stomach, and going quickly into the milky veins, make the way clear for those of a harder and more indigestible nature, which are to continue longer on the stomach. Beef, for instance, often remaining undissolved for even eight hours.

It is also much disputed, whether one should adhere to one or two dishes, or indulge in a variety. It is generally imagined, however, that a variety is of little consequence, provided you do not exceed in quantity, which a variety of articles is apt to encourage. A man will seldom eat too much of one dish, at least will not be apt to repeat the offence.

The English mode of sitting long after dinner, and drinking a variety of strong wines, and often to excess, cannot possibly be approven of. The introduction of tea has greatly contributed to diminish that practice.

It is a rule, which has been strongly recommended, to rise from table with an appetite; but this maxim cannot be generally adopted, as many sit down to table without one.

The ancient Romans eat their victuals in a reclining posture, and prepared for their meals by changing their clothes, and putting on a particular habit. The first must have been extremely inconvenient. In regard to the second, we often dress for dinner, but not with views similar to the Romans, who did it for the object of being more at their ease, and less incumbered with clothes while they were eating. The more recent fashion, however, is infinitely better than the preceding one, when the usual dress for dinner was as tight as possible, accompanied with the formalities of bag-wigs, swords, &c.

The Scotch plan of taking much mild broth or soup, and beginning dinner with it, is very useful in restraining an inordinate appetite for solid animal food, which, when indulged, or farther excited by provocatives, and followed up by the use of strong liquors, must ultimately tend to produce indigestion, and abbreviate life.

6. *Rules after meals.*—A variety of contradictory rules have been given, regarding the conduct to be pursued subsequent to the different meals. The interval betwixt breakfast and dinner, is the proper period for exercise, and the enjoyment of it, in a moderate degree, will strengthen and invigorate all the powers of life. It particularly promotes the appetite, and increases the circulation. After so solid a meal as dinner, however, all violent labour or exercise ought to be avoided, until what is called, 'the fever of digestion' is over. With active people, and those of strong habits, the intromission of an hour may be sufficient; but with the weak and delicate, no strong exertions ought to take place for a much longer period.

In warm climates, it is not unusual to sleep after eating. It is so general in those countries, that it must be found of service, but with us it is certainly unnecessary, and ought never to be given way to, unless where persons are either in a weakly state, or in advanced years. Under such circumstances, a short sleep will permit the digestion to proceed uninterruptedly, and the nourishment to give its full supply to every part, before it is again dissipated by the action of the body *.

---

* Turnbull, in his Medical Works, Vol. I. p. 43, observes, that sleeping after dinner, in warm countries, is only to be condemned, when it is carried

General result.—The subject of meals being of considerable importance to health and longevity, it may not be improper to sketch out a plan, more likely than the present, to promote such important objects, and the following hints for that purpose, are submitted to the reader's consideration.

The hours at which the different meals ought to be taken, must vary according to the season of the year, and the hour of rising. On the whole, the following seems to me a rational mode of living, for those who prefer health to fashion *.

In summer, rise about seven; breakfast about nine; take a little fruit, a crust of bread, or a biscuit about one; dine between four and five, so as to take some exercise in the cool of the evening; take tea or coffee, as is found most agreeable to the constitution, between eight and nine, and if any supper, strawberries, or any cooling fruit. Go to bed about eleven.

In winter, rise about eight; breakfast about ten; *take a slight repast* † about two; finish all the business of the day, and take a substantial dinner between six and seven; take tea or coffee about nine; no supper. Go to bed between eleven and twelve.

In

---

carried too far. That it may be necessary, when the body is enfeebled and enervated by the relaxing influence of a burning atmosphere. Where the diet also is of a vegetable kind, it is more difficult to have it completely assimilated.

* Where there is a large family, and the children live much with the parents, the hours must be altered, if residing in a town, to suit their hours of education.

† The *lunches*, so common in high life, are much to be condemned. They are, in fact, early dinners; and, if justice is done to the real dinner afterwards, the stomach must be oppressed. A little light soup and toasted bread is all that should be taken. To fast, from breakfast to a late dinner, is highly improper.

In spring, the hours ought gradually to tend to the summer system, and in autumn, to that of winter.

SECT. VII.

The Quantity of Food that ought to be taken at the different Meals; with some Observations on Abstinence, Temperance, and Excess.

AN intelligent author has justly remarked, that good health consists in a just quantity of food, and a just proportion of the meat to the drink*; and it cannot be doubted, that among the higher orders of society, almost all the chronical diseases, many of the infirmities of old age, and shortness of life in general, are owing to repletion. In polished nations, indeed, men commonly eat at least double the quantity of food necessary, and often four or five times more than they ought to do.

The quantity of food to be consumed, must certainly depend upon various circumstances, more especially on the exercise or the labour undergone; in other words, different quantities are necessary for those who live, 1. A sedentary life. 2. A life with exercise; and, 3. A life of labour.

1. Cornaro found, that twelve ounces of solid food, and fourteen ounces of wine, or twenty-six ounces in all, was as much as he could consume with safety; and when he increased the one to fourteen ounces, and the other to sixteen, even that moderate addition occasioned severe illness†.

---

* See Robinson's Dissertation on the Food and Discharge of the Human Body, p. 61.

† See Code of Longevity, Vol. III. p. 63. On the whole, too much stress seems to be laid on the doctrines of Cornaro. Feyjoo remarks, that God

Another respectable individual, who tried experiments with diet in the 64th year of his age, adopted the following plan*. He took for

		Ounces.	*Ounces.*
Breakfast,	Bread and butter,	4	
	Tea in dilution,	8	
			12
Dinner,	Bread,	2	
	Meat,	12½	
	Water,	4	
	Claret,	16	
			34½
Supper,	Water alone,		12
	Ounces,		58½
	or 3 lib. 10½ oz.		

But he afterwards reduced his food to fifty-three ounces per day, at a medium, principally by diminishing the quantity of water he had been in use of taking.

There is certainly no individual who ever tried a course of severe experiments on diet, with more attention, or with greater anxiety to be of service to human nature, than Dr William Stark, whose premature death is much to be lamented, as it is not likely that any other person will arise, of equal intelligence, and equal ardour, in the pursuit of useful science, and equally ready to risk his life, for purposes of public utility.

It is impossible even to give a short abstract of the various

---

God did not create Lewis Cornaro to be a rule for all mankind in what they were to eat or drink. The learned Jesuit Lessius, who translated the treatise of Cornaro from Italian into Latin, was so strongly persuaded by it, that he bound himself under the same restrictions. He, however, lived only to the age of seventy-nine, and that with many disorders which he laboured under. To one man, like Cornaro, who lived an hundred years with such strict diet, we may oppose a great number of others, who have lived much longer, without all these scruples. His constitution required such abstinence, which few others might be able to bear. Father Feyjoo's Rules of Preserving Health, p. 82.

* See Robinson's Dissert. p. 62, 63, and Table II.

ou experiments he tried, and the results of them; but it appears, that the utmost quantity of bread that he could eat in one day, when he took no other aliment, was forty-six ounces, and that the greatest quantity he could eat at one time, without uneasiness, was twenty ounces. For some days he eat only twenty ounces of bread per day, and took four pounds of water; and though he was hearty, and in good spirits, he found it necessary to increase the allowance, not only as he fell away, but was often very hungry*.

Dr Cheyne has made a calculation, of the quantity of food sufficient to keep a man of an ordinary stature, following no laborious employment, in due plight, health, and vigour; and he recommends eight ounces of flesh meat, twelve of bread, or vegetable food, and about a pint of wine, or other generous liquor, in the twenty-four hours. He adds, that the valetudinary, and those employed in sedentary professions, or intellectual studies, must lessen this quantity, if they would wish to preserve their health, and the freedom of their spirits long †.

But, on the whole, for sedentary people, the following quantities may be recommended. For breakfast, four ounces of bread and eight of tea, or some other liquid; for dinner, four ounces of bread, eight of meat, eight of water, and twelve of wine, or some generous liquor; and for supper, eight ounces of liquid food, making in all three pounds four ounces.

2. Those, however, that take moderate exercise, will require fuller diet; the amount of which must greatly depend on the quantity of exercise they take. When moderate exercise is taken, an addition of one third, or about seventeen

---

* The works of William Stark, M. D. p. 98, and 99. The public are much indebted to Dr Carmichael Smith for this useful publication.

† Essay on Health, p. 34.

ounces may be allowed ; but when violent, it may require one half additional, or twenty-six ounces. That, however, ought to be sufficient.

3. With a life of much personal labour, a great quantity of food is necessary to recruit the exhausted frame, and it is incredible the quantities which it is said have been consumed. Milo of Crotona, is said to have devoured twenty pounds of solid food in one day. The coalheavers in London consume a great quantity both of solid and liquid nourishment ; but those who are employed in common labour, may be satisfied with double the quantity allotted to the sedentary, or, in all, six pounds eight ounces, and thence to seven, or, with great labour, even eight pounds, of solid and of liquid food, one third of which should be solid, and the other two thirds liquid nourishment.

The only intention of these observations is, to give some data for reflection. It is in vain to suppose, that men, in these respects, will be tied down to any specific rules, or that they will take the trouble of weighing their food, or measuring their drink ; but if a certain quantity of each is fixed upon, as a general average, the eye will soon be able to determine about the quantity that ought to be consumed.

Considering the excess that is so often committed, in regard both to solid and liquid nourishment, it is a matter to be wondered at, how so many luxurious people have lived so long, and apparently in good health ; but for that various reasons may be assigned. 1. They commonly take a good deal of exercise, more especially on horseback, which enables them to digest their food. 2. They have, in general, the advantage of abundance of good fruit, another great help to digestion. 3. Their stomachs are strengthened, and their blood cooled by ices, which, in these respects, may be of service. 4. They have the best of wines, and knowing the importance of that article, they spare no pains or cost to secure those of the finest quality, more especially of that sort that agrees best with their stomach. 5. If unwell, they are generally in that situation in life, that they can have the advice of the ablest and most skilful physicians. 6. They are accustomed not to give way to despondency, or any mental weakness. To the misfortunes of others, even their nearest relations, they become perfectly callous; they never betray any anxiety regarding their own private affairs, if by any means they can procrastinate the the evil hour; and as for public concerns, however calamitous they may be, they hope for better times. Lastly, they acquire many useful habits, some of which will be afterwards explained, which materially contribute to the preservation of their health.

Before the subject of the proper quantity of solid food is dismissed, it may not be improper to make some general observations on, 1. Abstinence. 2. Temperance; and, 3. Gluttony or excess.

1. It is well known, that in some countries, occasional abstinence is enforced by law, and by several authors, it has been celebrated, as a most judicious regulation *. Abstinence from animal food, at particular periods of the year, is necessary in some countries, to enable the rising generation of animals to attain greater maturity; and in all countries it might be established to a moderate extent, as impressing habits of temperance, and recruiting the frame from the consequences of former repletions. Indeed, Mahomet, by his forbidding the use of wine, except medicinally, and establishing stated days of fasting, it is said, has shewn himself

---

* Many evils certainly proceed from our swallowing too much nutrition, thereby throwing into the constitution, a greater quantity of rich nourishment than it can bear, without injury to health.

self an intelligent medical legislator; and proved that he possessed a profound acquaintance with the nature of the human frame. Hence his disciples, by following his rules, are, in general, remarkable for their health and strength, and the dignity of their form *.

As the enforcing of abstinence, however, by law, is not much calculated for the European hemisphere, it may be proper to consider, whether it would not be advisable, occasionally to abstain from food, as a mean of preserving health, when persons, living in the usual state of European society, must often indulge more than is necessary. I knew a person of great literary eminence, who lived only occasionally in London, and bore, without inconvenience, the luxuries of that capital, by following one rule, that of eating only a poached egg on Sunday †. The celebrated John Hales, known by the name of 'The ever-memorable,' was a great faster, it being his constant custom to fast once a week, from his dinner on Thursday, till Saturday at breakfast; that is, Thursday evening, and all Friday ‡. And Cheyne recommends once a week, or a fortnight, or a month at farthest, either to live low, or *maigre*, as the French call it, or to take some domestic purge. Without, however, adopting any regular plan of fasting, it has been often found of service, when the stomach is disordered, or feels uneasy

---

* Pinkerton's Recollections of Paris, Vol. II. p. 356.

† A person of great experience has recommended, if at any time you transgress on one day, to repair the injury by greater abstinence on the next. Occasional fasting, without considering it as a religious duty, is the best antidote against too frequent feasting. See the Invalid, by A. Nonagenarian, p. 28.

‡ He died 19th May 1656, at the age of 72. See Wood's Collect. There are some instances of fasting, and of great abstinence, in Adair's Natural History of the Human Body and Mind, p. 167.

from repletion, to refrain from the next meal or two, rather than to take physic. Abstinence from food, for a short period, restores the force of the organs, by diminishing their exertions, and giving them rest.

But it must not be imagined, that abstinence is attended with no risk or danger to those who have been accustomed to regular supplies of food, and who are not compelled by disease to adopt that regimen. By abstinence, we leave the coats of the stomach a prey to an acrimonious humour, the voracity of which, nature intended should be employed on our food *.

It is said, that a fasting of twenty-four hours is followed with a disgust and aversion to food, and a tendency to putrescency, owing to the want of fresh chyle, the necessity of which has been already explained †. Persons, indeed, who

---

* Father Feyjoo's Rules for Preserving Health, p. 84. It is safer, we are told, to exceed a little in quantity, than to come short, as appears by the *Aphorisms* of *Hippocrates*, and those of *Sanctorius*. Indeed, the damage of a more full diet is soon remedied, either by exercise, or gentle evacuation; but the decay of strength, the natural consequence of too spare a diet, is not so easily repaired. And, in general, instances of abstinence, as they are but few, so are they of such as lived inactive and solitary lives, the waste of spirits being but little, their supply need but be answerable to it. Wainwright on the Non-naturals, p. 184.

† Cadogan, in his Dissertation on the Gout, p. 38, has the following judicious observations on abstinence.—Indolence, he says, occasions many diseases among those of weaker habits: colic, jaundice, palsy, stone, &c. with all the hysterical and hypochondriacal class. In vain have ingenious men, of reading and study, mental labour, and sedentary life, who are more subject to disease in general, than the gay and thoughtless, endeavoured to obviate the evil by abstinence, an excellent means of remedy in many cases, and which few practise, but true philosophers, who are not the most likely to want it. But yet even they do not find it to answer, and for the reasons which I have just given, that we cannot live two days in health and spirits with the same blood; there must be a new daily supply of that etherial part of our food, called up to the brain, to support its own, as well as the labour of the whole body. He adds, in another place, p. 48, fasting or abstinence, therefore, can never be salutary, but after repletion.

who have long lived a regular life, may use more freedom with themselves in this respect, than those who have lived in a freer manner; and their blood being in a better condition, fresh supplies of new and wholesome matter are the less necessary; whereas, when the blood has a tendency to putrescency, if it is kept for any length of time in that state, it must be apt to produce putrid disorders *.

2. A temperate diet, however, has been attended with the best effects. A regular attention to this virtue is the only infallible nostrum for the prevention of disease. It is sometimes necessary for those, who are under the necessity of having their minds always on the watch, to be extremely temperate; hence the gallant defender of Gibraltar (Elliot, Lord Heathfield), lived for eight days, during the siege, taking only four ounces of rice per day, as solid food †. The celebrated Doctor Franklin, when a journeyman printer, lived for a fortnight on bread and water, at the rate of ten pounds of bread per week, and he found himself stout and hearty with this diet ‡. A respectable magistrate informs me, in a private communication, that at the age of seventy, he was free from every bodily complaint, and had never paid five shillings a-year to the fa-

---

* See Willich's Lectures on Diet and Regimen, p. 300; and Nisbet on Diet, p. 75. I understand that the subject of abstinence is very ably discussed, in a work entitled, *Apologie de Jeune*, printed at Geneva, in 1 vol. 8vo, and which a respectable physician has some intention of publishing in English. Hippocrates, however, was far from approving of great abstinence. He says, that we commit a greater error in too rigorous a diet, than in exceeding something more than we ought; and that a strait diet is more dangerous than passing a little the bounds of what is necessary.—See his work on Ancient Medicine, sect. 1, n. 5, on the bad effects of a constant low diet.—See also, Shaw's Juice of the Grape, p. 45, on the bad effects of abstinence.

† Adair's Medical Cautions, 2 edit. p. 145.

‡ The Works of William Stark, M. D. p. 92.

culty in the course of his life, which he attributed to his having restricted himself to fourteen ounces a day of solid food. A number of old persons also, have lived in great indigence, a proof of the justness of Lord Bacon's observation, that intemperance of some kind or other, destroys the bulk of mankind; and that life may be sustained by a very scanty portion of nourishment *.

Hay, in his Essay on Deformity, contends, that health is more in a person's own power than is commonly imagined, and is rather the reward of temperance than the effect of constitution †.

It

---

* On this subject, a person of great eminence in the medical military department, has sent me the following remarks.—'I have wandered a good deal about the world, and never followed any prescribed rule in any thing; my health has been tried in all ways; and, by the aids of temperance and hard work, I have worn out two armies, in two wars, and probably could wear out another before my period of old age arrives; I eat no animal food, drink no wine or malt liquor, or spirits of any kind; I wear no flannel, and neither regard wind nor rain, heat nor cold, where business is in the way.'

† If every virtue, in its consequences, he adds, is its own reward, temperance is eminently so, and every one immediately feels its good effects. The maxims of temperance, however paradoxical they may appear, are not the less just: among these it may be stated, that the smallest liquors are the best; that there never was a good bowl of punch, nor a good bottle of champaign, burgundy, or claret; that the best dinner is one dish: that our entertainment grows worse in proportion as the number of dishes increase; that a fast is better than a lord mayor's feast; that no connoisseur ever understood good eating; that no minister of state or ambassador ever gave a good entertainment; no king ever sat down to a good table; and that the peasant fares better than the prince, &c. Being inspired with such sentiments, what wonder is it if sometimes I break out into such ejaculations.—O temperance! thou goddess most worthy to be adored! thou patroness of health! thou protector of beauty! thou prolonger of life! thou insurer of pleasure! thou promoter of business! thou guardian of the person! thou preserver of the understanding! thou promoter of every intellectual improvement, and of every moral virtue!

It is proper to remark, however, that the consequences of a too slender diet, are more fatal than one that is more plentiful. How many young women, with a view of reducing their corpulency, stint their appetites, and ruin their health for ever. It is easy to remove, by evacuation, the troublesome fulness which is caused by over-eating; but to restore health, destroyed by long abstinence, is extremely difficult *.

3. Many are the causes of ill health; but the principal one is the variety and excess of food.

No man, says Galen, would ever be seized with a disease, who takes sufficient care to avoid crudities or indigestion; that is, who eats no more than he can digest: and Dr Cheyne remarks, in his English malady, that what is eaten and drunk, and taken into the habit, is the original cause of almost all the diseases which afflict mankind, external accidents, pestilential and contagious diseases, or what the body suffers from the passions of the mind, alone excepted.

Eating too much food, in general, for a length of time, weakens the organs of digestion, debilitates the constitution, and wears it out. Hence arise gout, apoplexy, and all the diseases attendant on old age. In disease, men eating too much, never escape with impunity †.

---

* Valangin on Diet, p. 85. An intelligent physician has also remarked, how cautious medical persons ought to be in prescribing a strict regimen in respect to diet, more especially if such regimen is intended to be continued long. Few persons, even of the best health, can, without disgust, bear to be confined to a peculiar food, or way of living, for any length of time. Things disagreeable to the palate, seldom digest well, or contribute towards the nourishment of the body; and the body must be weakened, when too small a quantity of food is taken in. Falconer's Observations on Diet and Regimen, p. 8.

† Easy Way to prolong Life, p. 35.

The inventions of gluttony also, are often detestable. What can be more horrid than the mode of preparing what is called *a devil*, for the purpose of creating artificial thirst? The gizzard of a turkey may be taken for an example. First, the flesh is *bedevilled*, as it is called, with pepper and salt, then a little nutmeg, a little cinnamon, a blade of mace, with shallot, onions, &c. are added, and it is then eaten with oil, vinegar, and mustard. Such an heterogeneous mixture must become a caustic fluid, tearing or destroying the finer vessels, and generating fevers, calentures, and every disease incident to the human body*.

Impressed with a full conviction of the dangers resulting from excess, the author of this work, early laid it down as the best maxim he could adopt, for the preservation of health, to pay a proper attention to TEMPER, TEMPERANCE, and SLEEP. By good temper, the mind is preserved from disease, and by temperance, the body; and, when both the mind and the body are exhausted, they are again recruited, and restored to their former strength, by a sufficient quantity of repose †.

SECT. VIII.

Rules of a Miscellaneous Nature.

IN addition to the preceding observations, it may be proper to make a few cursory remarks, regarding the rules which ought to be adopted with respect to solid food, as connected with the climate and the seasons, and adapted to infancy, childhood, youth, manhood, sickness, and old age.

---

* See the Invalid, by A. Nonagenarian, p. 53.

† Essays on Miscellaneous Subjects, by Sir John Sinclair, p. 451.

1. *Climate.*—It is a common observation, that nature itself points out the sorts of food the best calculated for the inhabitants of different countries, by the articles which are either indigenously produced, or are raised with the greatest facility; hence, that in warm countries, vegetable food ought to be preferred, and in cold countries, animal. It is a good general rule, therefore, to live upon the productions of the country where one resides, and to consume them in the manner usually adopted by the inhabitants thereof *.

2. *The Seasons.*—It cannot be questioned, that different proportions of food ought to be consumed at the different seasons of the year, which the feelings of every individual will naturally indicate †. In winter, the greatest quantity of solid food is necessary, and can be safely taken; but the quantity should be gradually diminished during the other seasons of the year. The following is the proportion adopted by Dr Robinson, during one year of his experiments.

Season.	*Meat.*	*Drink.*	*Total.*
Winter........	19.51	42.35	61.86
Spring	19.77	41.03	60.80
Summer	21.33	34.98	56.31
Autumn	20.73	34.59	55.32
Medium...	20.33	38.24	58.57

---

* See Tryon's Way to Health, p. 116.

† Robinson's Dissert. Table 2.

It is a proper system, in winter, to use more meat and less drink; in summer, less meat and more liquids: in summer, meats oftener boiled; in winter, roasted; in summer, meats cold; in winter, hot.

3. *Infancy.*—Some observations on the diet of infants have been already given*; and the subject is, in general, sufficiently understood, for nature points out, and custom sanctions, that milk of some sort or other is the most suitable aliment for this stage of life. Any species of bread given to infants, ought to be unfermented; perhaps biscuit powder is the best.

4. *Childhood.*—Even after an infant is weaned, animal food should be avoided, or at least given very sparingly; vegetable food and milk being the best diet for the first five or six years. The consequences of a different system are often extremely fatal; and the greater frequency of convulsions, in England than in Scotland, is attributed to the more luxurious manner in which children are brought up in England, getting, at an early age, great quantities of butter, meat, fermented liquors, &c. and often without a sufficient quantity of pure air or exercise. This oppresses their tender organs, brings on a too early maturity, which stints their growth, and must occasion those nervous, and other disorders, with which they are afflicted, to a much greater degree than the Scots, who are brought up with less delicacy, and in a more hardy manner.

5. *Youth.*—The diet of young people should chiefly consist of diluents, in order to facilitate the progress of their

---

* See Part I. c. 4. p. 127. It may be proper to add, that women's milk at first contains a large quantity of sugar, and a less proportion of coagulable or cheesy matter, a mixture peculiarly well adapted for a very young child; but some months after, the coagulable matter increases, and the sugar proportionably diminishes. Hence it is, why a young child, of a month old, will not, in general, thrive on breast milk, eight or nine months old. See an Easy Way to prolong Life, p. 13.

growth. Hence broths, and a large proportion of vegetables, are the most suitable nourishment. Milk also, is a proper part of diet, and it should be used in every form, during this stage of life. In point of drink, water is the best, and should be almost the sole beverage. Condiment of all kinds, with the exception of a moderate quantity of salt, should be avoided; and nothing should be taken that can, by stimulating the system, induce a too early maturity, before the constitution is ripened for it by years. It is at this period of life, that the habits of the man are, in some measure formed; and as much depends upon custom, it is of general importance, to accustom persons in their youth, in some degree, to that mode of living, which is most likely to be of use to them when they get old; and this observation is particularly applicable to the lower orders, who are more the children of custom or habit, than even the upper classes.

6. *Manhood.*—When the body has reached its full growth, the quantity of food should be rather abridged; but, from the greater exertions, both personal and mental, which are usual in a state of manhood, *the aliment should be of a more nourishing nature*, and a proper proportion of animal food should be interposed. Moderation, however, is necessary, at this period of life, as well as of every other, though greater latitude is commonly given during manhood, than at any other time.

7. *Sickness.*—The rules of diet in sickness, are a subject of great extent, and which belong more properly to the medical department. It is proper, in such cases, to have the aid of an intelligent physician, whose advice must depend upon the nature of the disease, the constitution of the patient, and the circumstances of each particular case *.

---

* Arbuthnot, in his Treatise on Aliments, Chap. 3. & 4. has given a

8. *Old Age.*—The diet of old age should, in some degree, return to that of the early periods of life. Broths and liquid food should be principally made use of, and all the nourishment taken should be of the most digestible kind. A moderate proportion of the safest condiments may be used at this period of life, for the appetite becomes more languid, and the springs of the machine less able to perform the operations that are required. In regard to drink, the use of fermented liquors, more especially wine, is peculiarly allowable at this period of life; for the vital powers require, in some degree, to be supported, and the languid action of the system to be kept up.

As any error in the diet of age, however, is more dangerous than at any other period of life, it may not be improper, to be more particular, regarding this branch of the subject.

It is certainly more healthful for old people, to eat three or four times a day, than to make one hearty meal, which obstructs perspiration, No aged person, however, should eat more than one considerable meal of solid food in the day. The stomach will manage a dinner, when breakfast and supper have been light; otherwise the load of one meal not being gone off, before another is brought on, neither will be digested.

Old people ought to live on light and moist food, which will make a thin blood, capable of penetrating the smaller vessels of the body, which, in age, grow strait, and are frequently almost stopped up.

Beef and pork ought to be avoided, but mutton, lamb, veal,

---

variety of practical rules of diet, applicable to the different diseases, but in a style hardly intelligible to any but medical men, which perhaps, indeed, was the author's intention.

veal, chickens, rabbits, and fish, are well calculated for old age, and these certainly produce a sufficient variety.

The breakfast ought to be moderate, and the dinner not too early, to prevent too great an appetite for supper. A light supper is of use, to prevent too great an appetite for breakfast. The stomachs of old people should never be overloaded. The meals, however, should be so arranged, that the appetite should not be fasted away, as the power of digestion goes with it.

During meals, weak malt liquor is well suited for old people, and a few glasses of rich wine after dinner *.

Roots ought, in general, to be avoided, potatoes excepted. Turnips are innocent, but watery; parsnips are nourishing, but not generally acceptable; and carrots are very unfit for weak stomachs, cabbage of all kinds breed wind; asparagus and artichokes, however, are excellent for old people, more especially if liable to gravelly complaints.

Salad should be shunned, though some recommend the cabbage lettuce, as having a tendency to promote sleep.

Particular care ought to be taken to eat no butter or cheese, but of the best quality, and in moderation; fine Cheshire or Parmesan, are the best kinds of cheese.

Fruits, when thoroughly ripe, are innocent, the pine apple excepted, which is extremely dangerous to old people. Cucumbers also ought to be avoided

All mixtures of food, or variety of dishes, ought to be shunned by persons advanced in years, who ought also to be

---

* The art of preserving long health and life must consist, in using no greater stimulus, whether of the quantity or kind of our food and drink, or of external circumstances, such as heat and exercise, and wakefulness, than is sufficient to preserve us in vigour; and gradually, as we grow old, to increase the stimulus of our aliment, as the inirritability of our system increases.—Darwin's Zoonomia, Vol. I. p. 468.

be upon their guard, against those articles to which they have not been accustomed *.

CONCLUSION.

General Rules.

We shall conclude with some general rules, necessary to be attended to, regarding the consumption of solid food.

1. We should not eat immediately after exercise, nor when we are hot, but forbear till the spirits are settled †, and the body is cool. Neither should we come to meat burdened with care or business; for, owing to the sympathy between the brain and the stomach, a disturbed mind will impede the functions of the stomach. It is for this reason, that we ought not to eat alone, in a churlish melancholy manner, but cheerfully with our friends. Mirth and good company help a dull stomach, create an appetite, and forward digestion. Lively music also, is a pleasing, and useful addition to a feast.

2. It is a proper rule, never to eat a second time, till the stomach has completely emptied itself of its former contents, and it should be at such a distance from bed-time, that digestion should be nearly finished before we sleep; for the preparation of our food by the stomach, and the application of it to nourish the body, are actions of a different nature. The most reasonable times for eating are,

---

* See the subject more fully discussed, in the Old Man's Guide to Health and Long Life, by J. Hill, M.D.; also the Nurse's Guide, to which is added, an Essay on Preserving Health, and Prolonging Life, by an eminent physician, Cap. III. p. 87.

† See Mainwaring on the Preservation of Health, p. 64.

in general, about an hour or two after rising, and two or three hours before going to bed *. The proper interval between one meal and another, in the day time, must depend on the strength of the stomach, and the quantity and quality of the food taken, varying from four to six hours.

3. Exercise should not follow immediately after a meal. Nothing should interfere with the action of the organ whilst engaged in that process. This rule is particularly applicable to the delicate and the nervous. The brute creation pay particular attention to this rule, by lying down, and enjoying a state of rest, the moment their stomachs are filled.

4. We should take care also to chew our meat well; nature having provided teeth expressly for that purpose. The saliva with which we thus mix it, furnishes some help to digestion. Besides, in breaking it down with the teeth, less labour is imposed on the stomach. To eat greedily, therefore, and swallow our meat hastily, is not only indecent, but highly injurious to the health. Food thrown too hastily into the stomach, distends its coats too suddenly, and consequently weakens them. By a hasty and imperfect mastication, the food does not receive that preparation which it ought to have, previous to its reception into the stomach.

The ancients accounted mastication to be so indispensably necessary to the preservation of health, and protrac-

tion

---

* See Burton on the Non-naturals, p. 230. Wainwright's Mechanical Account of the Non-naturals, p. 208. recommends three hours after rising, and four or five before going to bed, founding this doctrine on several aphorisms of Sanctorius, particularly Sect. 1. No. 57. Sect. 4. No. 20. 28. and 35. But this would certainly be going too far. It is to be observed, at the same time, that the custom among people of fashion, of dining at a late hour, is, on the whole, rather salutary, and preserves many people in good health, who are by no means remarkable for their temperance.

tion of life, that they considered those who did not perform this simple office with care and pains, as enemies to their own ease and happiness; especially aged persons, with weak stomachs, of a sedentary and inactive life, hard students, and men of letters, who are generally deprived of the great advantages arising from due labour and exercise *.

The moderns enforce the same idea, with equal zeal and anxiety, inculcating this doctrine, that thorough mastication is the best means of preventing indigestion, and the dangers even of any excess in our solid food †.

5.

---

* See the Method of Preserving Uninterrupted Health to extreme Old Age, p. 2.

† See the Almanac des Gourmands, 2de année, p. 286.

The subject of mastication is of such infinite consequence to preservation of health, I thought it right to annex the following observations regarding it in a separate note.

Mastication being the first act of digestion, an error here is of greater consequence than people in general can possibly conceive. A good concoction, it may be safely said, can never be made, if this act is not well performed. Our fore-teeth were given us, no doubt, to divide the food we take into the mouth; the jaw-teeth, from their make, evidently point out to us, that they were intended to grind it: with these, then, we should separate, and thoroughly mix the food, assisted by the saliva, which flows into the stomach in considerable quantities, if invited by this act of mastication. When this is well done, it will become a soft homogeneous mass, which, when carried into the stomach, will, by other concurring acts of digestion, be easily reduced into good chyle, and from which all the liquid and solid parts of an animal are made and supported. The following are the bad consequences of want of due mastication: 1. The food, if swallowed almost whole, will be three times as long in concocting. 2. The food, being of different and opposite qualities, the one will dissolve, while the other remains almost in the state it was in when swallowed. From this irregular concoction, flows many evils and diseases, impossible to be investigated by human knowledge. See Smith's Letter to Cadogan, p. 53.

By mastication, food is reduced to a good paste, by which means the stomach is freed from the heaviest part of its labour, and can with more ease extract from the food its most nutritive parts. Those who masticate well, require a far less quantity of food; because the nutritive matter in

it

5. It is proper to restrict ourselves to those kinds of food, which experience points out as the best calculated for our constitution and stomach. We should never eat any thing that lies heavy on the stomach, or that rises in it, or is long in passing off, or that is flatulent or windy, or occasions belching, heartburn, gripes, or fluxes. These are sure symptoms of improper digestion, the forerunner and the source of half the disorders to which we are liable.

6. The question how far a variety of foods is admissible, has been much disputed. It is proper to observe, that foods must, in some respects, be various. Thus, there must be a mixture of liquid and solid foods; there ought also to be a mixture of animal and vegetable foods. In regard to the question, *whether a variety of the same kind*, be necessary or proper, for instance, in regard to animal foods, beef, fish, fowl, &c. at the same time, the celebrated Cullen has observed, that, in general, he never perceived any inconvenience from this mixture, or difficulty in assimilation, provided a moderate quantity be taken *. There are, however, some exceptions to this; as taking a large proportion of ascescent substances with milk; or a mixture of fish with milk, by which the milk is coagulated too firmly to be easily digested. The principal objection to a variety is, that it provokes gluttony. Physicians have, therefore,

---

it is employed in greater quantity. It is probable, that, during mastication, the lymphatic system takes up many useful particles, of which, by improper mastication, the body is deprived. Strune's Asthenology by Johnstone, p. 251. It is supposed, that a pound of bread well chewed, carries with it into the stomach near the same quantity of saliva; and through the lacteals above two pounds more, by an addition of the other digestive humours. Hence another great advantage from complete mastication. Adair's Medical Cautions, p. 214.

* Materia Medica, p. 105.

therefore, almost universally, preferred simplicity of diet, as satiety is sooner produced by one, than by many substances *.

7. It is curious to observe the different rules that are given, regarding the quantity of food to be taken at meals. One author very gravely recommends, never to fill the stomach, so as to render it necessary to *unbutton* or *unlace* †, which is surely gixing ample latitude to both sexes. Some contend that we ought to eat as much as we can, but this rule cannot be recommended. The stretching any power to its utmost extent weakens it. If the stomach is every day obliged to do as much as it can, it will every day be able to do less. A wise traveller will never force his horse, to perform as much as he can, in one day, upon a long journey ‡.

Others contend, that we should leave the table without having a sense of fulness in the stomach. But the fact is, that the food, which is not felt in the stomach, or, in other words, which does not occasion some fulness, (not arising at the same time from its weight, or from flatulence), is tardily concocted. The stomach, indeed, goes through the process of digestion best when it is sufficiently full.

---

* A variety of dishes, it is said, is a suitable entertainment for grandeur and gluttony; but though a good stomach may digest fish, flesh, fowl, wine, and beer, at one repast, yet nothing can be more prejudicial to the health, than our indulging ourselves in a discordant variety of aliments at the same meal; and if we add, (which is too frequently done), fruits, cream, and salads, to the articles mentioned, the bowels will be distended by the flatulent mixture, and the digestion perverted.

† The Family Companion of Health, p. 23.

‡ Father Feyjoo's Rules for Preserving Health, p. 85. Nothing can be more absurd than the custom of pressing persons to eat and drink, under the pretext of kindness and civility; it is like forcing a tired horse to take a longer journey.

Many physicians go so far as to say, that we should leave off eating, before the stomach is cloyed, with a relish for more meat; and even to rise from the table with some appetite. But as many people sit down to table without having what can be called an appetite, it is impossible to rise with one.

On the whole, the following rules seem to be the most rational, regarding this important particular: 1. We ought always to desist from eating before the sense of fulness becomes oppressive. If the stomach be too full, digestion is not only stopped, but a kind of palsy of the stomach is produced *. 2. The most healthful quantity of food is such as, after eating, will not hinder the body from performing the same labour or exercise, and with the same activity as it did before it was eaten. The body should feel rather ballasted than overloaded, and the mind as fit for labour or study soon after, as much as previous to the meal. Indeed, if any one is drowsy or dull after a meal, it is a sure sign that he has eaten too much. 3. If, after a meal, a person can not only write, walk, or do his necessary business, with ease and pleasure; but if, after supper, he sleeps his usual time undisturbed, if he finds his rest not shortened by what he has eaten or drank, and rises next morning without a head-ach, or a bad taste in his mouth, and at his common rising hour, it is an indubitable proof, that he lived the foregoing day, conformably to the rules of temperance.

8. Custom is another point to be considered in the choice of food. What we have been longest used to, generally agrees best with us †. Change of diet is apt to cause some

---

* Adair's Medical Cautions, p. 255.

† We are much governed by habit, in regard to the foods we wish to take;

alteration*; therefore, when a new diet offers itself, as upon change of places and countries, we should at first be sparing; upon further use we may be bolder. Nay, even with those to whom a change of diet becomes necessary, it should be brought about by degrees.

9. There are a number of miscellaneous rules regarding solid food, which cannot be comprehended under any particular head, among which the following merit particular attention. 1. The nourishment we take, should be merely sufficient to supply the waste of system. The amount, therefore, must depend upon circumstances. Lean men, for instance, *(cæteris paribus)*, wear faster than fat men, their blood being generally more acrid, and agitated with a greater degree of velocity. They require, therefore, larger repairs*. The young and growing also, must have abundant supplies. 2. If we could provide against crudities, we should rarely fall sick. 3. As most diseases derive their original from repletion, to eat moderately, is the way to escape

---

take; for instance, beer taken to breakfast will disturb the digestion of those who have been accustomed to tea; and tea taken at dinner, will disagree with those who have been accustomed to beer. Darwin's Zoonomia, Vol. I. p. 454.

* The following judicious observations merit attention. There are some who, after living freely, and indulging themselves in wines and high eating, feeling bad effects from such a course, and seeing in others the bad effects of intemperance, commence a different course of living, observe precise rules, live mostly upon a vegetable diet, and use only water for their drink: nature does not, in general, admit of such sudden changes. From the spare diet they have adopted, the powers of digestion become enfeebled, a collection of crudities, or an accumulation of phlegm in the stomach and intestines, necessarily takes place. They become meagre, sallow, and relaxed, and the only chance they have of a restoration of health, is to return to a more generous diet, to make use of a proper admixture of animal and vegetable food, and to drink more vivifying liquors. See Some Thoughts on the Relaxation of Human Bodies, p. 18.

* Barry on Digestion, p. 144.

escape them. 4. The more we feed foul bodies, the more damage we do them. 5. If we eat too much at one meal, we should abstain from the next, to get the body again in order: but not the reverse. 6. Hence, when by any accident, as in travelling, a person has lost his dinner, he ought not to eat a voracious supper to make up for it, otherwise he will spend a restless night, and not a comfortable one, as would probably have been the case, had he taken a slighter supper, or both dined and supped moderately. 7. It is a vulgar error to imagine, that the more a man eats, the stronger he is; for whoever eats more than nature requires, receives less nourishment, and thereby impairs his strength. *What he leaves*, often does him the most good. 8. People, in general, especially those who do not labour, eat much more than nature requires. A little abstinence or self-denial, may often be of use, either to prevent or cure disease. None but hard-working people, or those who are in the very prime of life, or growing fast, or travelling about, should eat more than one substantial meal each day. 9. Foods generating much air, or what are called *flatulent*, should be avoided by weak stomachs. 10. Adults are better nourished on the alkalescent, the young and growing, on gelatinous, foods. 11. It is a good rule, when you recover your pristine state of health, gradually to return to that regimen by which you formerly enjoyed it. 12. Hippocrates justly observes*, that we ought to prefer that food and drink, which is most agreeable, though of a less wholesome quality, to what would seem better, but is more displeasing to us. 13. It is unwholesome eating custards, tarts, pies, almonds, walnuts, nuts, cream, &c. directly after dinner, upon a full stomach; for the stomach having already received suf-

---

* Aphor. Sect. II. Aphor. 38.

ficient food for the nourishment of the body, and probably as much as it can well digest, the additional quantity, overloads the stomach, creates fever, and becomes prejudicial to the constitution.

10. Some general observations, regarding the diet of the rich, and of the poor, may not be unacceptable at the conclusion of this chapter, though, for more minute details, the preceding pages of this, and the preceding chapter must be referred to*.

In regard to solid food, the rich ought to live upon articles, either by nature easily digestible, as game, poultry, the lightest sorts of fish, &c. or upon meat long kept, and thus rendered digestible by art. They should never take any salted meat, or salted fish, except done in the slightest manner. Their diet ought to consist of articles that afford moderate, but wholesome nourishment, that fill the stomach, without overloading it, and, above all, that are easily digested. With animal food, therefore, a considerable quantity of bread, potatoes, and other vegetables, ought to be taken. The following proportions of the different sorts of solid food, may, in general, be most advisable, namely, one third of animal food; one third potatoes and other vegetables; and one third bread.

The laborious poor, on the other hand, ought to live on articles wholesome, but coarse, and not easily digested. When the stomach is empty, they cannot work, hence the finest bread is the best for them, (being the most indigestible), though not for their wives and children. Cheese, salted meat, and salted fish, tripe, cabbages, &c. are excellent.

---

* The diet of a ploughman would oppress the digestive and vital organs of a sedentary person; and a spare diet, chiefly of vegetables, would not support a labouring man. Adair's Medical Cautions, p. 295.

lent. Waxy, are preferable to mealy potatoes for them, but dried potatoes better than either. The pulse tribe, as beans and peas, when arrived at maturity, are excellent. Nuts, in moderation; but other fruits ought to be avoided, being too digestible for their strong stomachs, and rarely ripe when within their reach. Where fine bread cannot be had, either biscuit, or boiled grains, as pot-barley, or rice, ought to be procured for them. Roasted, or baked meat, is more nourishing than boiled, and fat meat better for them than lean. There could not be better food for them than fat meat, baked or roasted, with potatoes done under it, if it did not excite so much thirst. It is particularly to be observed, that when the laborious poor eat animal food, it should be either dried or salted, *or in as fresh a state as possible*, so as to be the more indigestible *.

Whether the food of the poor ought to be liquid or solid, is a point that has been much controverted. Broths and soups, being rather drank than eaten, defraud the stomach of that salivary juice, which a competent mastication carries down with it, and of which it is so fond; and solid meats also, give more exercise to the stomach, by which it is strengthened. The nature of the aliment, it is said, ought certainly to be in proportion to the strength of the stomach. Hence, those who use a great deal of labour or exercise, and whose stomachs are more strong and elastic, ought to have stronger food, their nourishment being more quickly dissipated, by the vigorous action of the stomach †.

I

---

* These observations are principally applicable to the poor in England. In Scotland, the greater proportion of the laborious classes of the community, hardly ever taste animal food, but live on porridge, bread, beer, and water-kail, as it is called.

† Burton on the Non-naturals, p. 211.

I am well aware, of the sentiments of an intelligent author on the subject of dietetics and health, that the constant use of dry bread, and animal substances, excites an unnatural thirst, and leads to the immoderate use of beer, and other stimulating liquors, which generate disease, and reduce the lower orders of the people to a state of indigence *. And, certainly, that system is carried to an extreme, in many parts of England. Perhaps the best plan for the nourishment of the laborious poor, hitherto introduced into practice, is that adopted by the keelmen of Newcastle, who purchase fat meat, which they make into broth; the liquid part is given to their wives and children; the solid part they consume themselves, with bread, in slices, taking it with them in a cold state. Such meat is not so nourishing, as when roasted or baked; but that is made up for, by an addition to the quantity. In this way, also, less fermented liquor is necessary, than by other modes of using animal food.

---

* Buchan's Domestic Medicine, p. 619.

CHAP. IV.

ON DIGESTION AND THE EFFECTS THEREOF.

WHEN one considers the immense quantity of liquid and of solid food, consumed by an individual in the space of a single year, and still more so, during the course of a long life, it is natural to inquire, what purposes can such a variety of articles answer, and what ultimately becomes of them? In the course of a few years, the produce of several acres of land, the weight of a number of large oxen, and the contents of many tuns of liquor, are consumed by one individual; whilst he continues nearly the same, whether he drinks the pure stream, or the beverage the most skilfully compounded; whether he feeds on a variety of articles produced from the animal and vegetable kingdom, or confines himself to one particular substance; and, whether his food is prepared, in the plainest and simplest manner, or by the most refined and artificial modes that luxury has hitherto invented. All these circumstances depend upon the process called *digestion;* the nature and effects of which, we shall now endeavour briefly to explain.

In order that the subject may be the better understood, it is proper to observe, that the substance of the body is not permanent, but is perpetually wasting, and perpetually recruited. It appears, from the most conclusive experiments, that every particle of the firmest bone is successively absorbed and deposited again; and that the solids of the body, whatever their form or texture may be, are incessantly renewed. The whole body is, in fact, a perpetual secretion, and the muscles and their tendons, all the finer, and all the more flexible parts of the body, nay, the very bones and their ligaments, are perpetually renovated, and are as much to be accounted secretions, as the saliva that flows from the mouth, or the moisture that bedews the surface. The health of all the parts, and their soundness of structure, depends on this perpetual absorption, and perpetual renovation, for it is by means of these operations, constantly repeated, that all the parts and organs of the body are preserved in a state fit to execute the various offices for which they were destined.

In explaining the subject of digestion, the following plan will be pursued. To consider, 1. How the food, when thrown into the stomach, is prepared in that organ for the nourishment of the body. 2. In what manner the blood is formed from the food thus prepared. 3. What is the nature of assimilation or nourishment, in so far as that intricate subject has hitherto been explained. 4. In what manner that part of the food is disposed of, that is not required for the nourishment of the body; and, lastly, What are the best means of promoting digestion, when there is any deficiency or error in regard to that important function.

SECT. I.

Of the Operations of the Stomach in preparing Nourishment for the Body.

THE stomach is a capacious bag or paunch, into which the liquid and solid aliment is received, for the purpose of being converted into a state capable of affording nourishment to the human frame. The stomach is not only a large, but a muscular bag, and capable of greatly contracting its dimensions; it is also very sensible, and easily affected by any thing that acts upon its nerves, whether agreeably or otherwise. Of such essential importance is the stomach, that no animal can live without one; and various animals, as the hydatid, the oyster, the polypus, &c. owe to the stomach, every muscular motion, and to it also, every living power, suited to their mode of existence, and the continuance of their kind; life itself being preserved in the stomach, independently of almost every other organ. In the human being, the stomach, placed in the middle of the frame, is found to be the centre of every impression, affecting either the body or the mind; it is the receptacle of food, of poison, and of medicine, the effects of which, on that important organ, are propagated to every other part; it is the organ, the most subject to disorder, but fortunately the most accessible to remedy; it regulates the motions and sensations of the whole system, and, *like the father of a family*, as Lord Bacon energetically calls it, it keeps all the parts in proper balance, and in due order; it seems to be the centre of power and motion, from which the vital principle, whatever it be, is determined into the different parts, including not only the common functions of the body, but even the thinking power in the brain *.

It is principally in regard to this organ, that animals and vegetables differ as to their means of nourishment. Vegetables, it is well known, are attached to the soil, from which they absorb the nutritious particles of the fluids which moisten the earth, or those which float in the atmosphere by which they are surrounded; whereas, animals possess the means of moving from one place to another, and of transporting along with themselves, the provisional juices necessary for their nourishment. Accordingly, an internal cavity or stomach is given to them, within which they deposite articles proper for their nourishment. The magnitude of this cavity, and the width of the passages leading to it, admit the introduction, not only of liquid, but of solid substances. In order that the stomach may be enabled to fulfil its functions, instruments are prepared for dividing the food before it is thrown in, and liquids calculated for the

---

* See an excellent tract by Dr Charles Webster, entitled, Facts tending to shew the Connexion of the Stomach with Life, Disease, and Recovery, p. 6. 7, &c. The importance of the stomach cannot be better explained, than by the celebrated fable, which Livy has so ably recounted in the following manner: "In times of old, when every part of the body could think for itself, and each had a separate will of its own, they all, with common consent, resolved to revolt against the belly. They knew no reason, they said, why they should toil from morning till night in its service, while the belly, in the mean time, lay at its ease, in the midst of them all, and indolently grew fat upon their labours. Accordingly, one and all, they agreed to befriend it no more; the feet vowed they would carry it no longer, the hands vowed they would feed it no longer, and the teeth averred they would not chew a morsel of meat, though it were placed between them. Thus resolved, they all, for some time, shewed their spirit, and kept their word, but soon they found, that, instead of mortifying the belly by these means, they only undid themselves, they languished for a while, and perceived, when too late, that it was owing to the belly that they had strength to work, or courage to mutiny."

the solution of the aliment after it is swallowed. And as the capacity of the stomach and intestines is not so great as to contain at once a quantity of food, sufficient to maintain life for many hours together, it is therefore necessary, that the stomach should be frequently filled with fresh aliment *.

The stomach is far from recommending itself by any elegance of appearance, on the contrary, it is generally considered an unsightly membranous pouch; but the delicacy of its texture, the consideration of its extraordinary powers, and the importance of its functions to the health, and existence of the human frame †, must create a salutary reluctance to hazard any practice by which it can be injured ‡.

On the whole, then, the state of the stomach is of the first importance, as determining the general health of the frame. It is the sentinel of the body, that, on all occasions, gives the alarm; and, by its disagreeable feelings, warns us of our own impropriety, both in the quantity and quality

---

* See an Introduction to the Study of Animal Economy, by Cuvier, translated by John Allan, p. 12.—Also, Dr Carlton's Inquiries into Human Nature, p. 66. 67.

† With his usual felicity of thought and of expression, has Shakespear described the importance of the stomach—

> It is the store-house, and the shop
> Of the whole body. True it is,
> That it receives the general food at first,
> But all the cranks and offices of man,
> The strongest nerves, and small inferior veins,
> From it receive that natural competence
> Whereby they live.—Coriolanus, Act I. Scene 1.

On the state of the stomach, indeed, depends every organ and function of the system. Van Helmont calls the inferior aperture of the stomach, (the pylorus), the careful sentinel, which denies a passage to any thing injurious to health; and other authors have called it, the animal, the conscience of the body, and the seat of the soul.

‡ Beddoes's Hygëia, Vol. II. Essay VIII. p. 7.

quality of what we eat and drink. The admonitions of this monitor are always just; and when they are disregarded by the individual to whom it belongs, the most serious consequences generally ensue *.

Having premised these general observations regarding that important organ, we shall now proceed to consider the process of digestion.

Most authors, who have endeavoured to explain the digestion of the food in the stomach, have been so fond of their own particular *hypothesis*, as to reject entirely those of some others, which, though not entirely, may, perhaps, be partly true. Thus, the *Galenists* have ascribed the cause of digestion, to the heat of the stomach; the chemists, to a *dissolving ferment;* and the mathematicians, to the mechanical action of its own fibres, and of the contiguous parts: whereas, no single cause is sufficient; but all, in different degrees, contribute to produce that alteration, which the aliment undergoes †.

After fully considering this subject, and a variety of publications regarding it, I am inclined to consider the following agents, as those which, in a greater or lesser degree, promote the process of digestion in the human stomach. 1. The saliva, or spittle. 2. The gastric juice. 3. Its contractile force; and, 4. Heat ‡.

---

* See Adair's Medical Cautions, 2d ed. p. 173.; also, Nisbet's Treatise on Diet, p. 390.

† Barry on Digestion, p. 20.

‡ Some also imagine, that the air which finds its way into the stomach, must have some effects favourable to digestion, (see Barry on Digestion, p. 9); and as the atmosphere has such astonishing effects in the dissolution of bodies, the air may have similar effects on the stomach. Dr Falconer also observes, that the presence of air in the intestines, is, to a certain extent, necessary and useful, and must serve important purposes in the animal economy.

1. *Saliva.*—Before any solid food is received into the stomach, it is previously masticated in the mouth; the importance of which process, has been already dwelt upon in the preceding chapter. It is of such consequence, indeed, that, as *Hippocrates* has well observed, *such as live to a great age have many teeth;* not only denoting that their preservation is a mark of the healthy state of the fluids, and a freedom from acrimony, but that the food is generally well prepared: whereas, those who have bad, or few teeth, are, from an imperfect *mastication*, more subject to such disorders as arise from imperfect digestion *.

The food cannot be too much masticated, or reduced to the smallest and minutest particles, for the purpose of facilitating decomposition in the stomach; it is also of great service, its being mixed with the saliva, for the purpose of lubricating or moistening the passages through which the food has to go. It is the opinion, however, of one of the most intelligent authors who has written on this subject, that the saliva has little or no effect in promoting the digestion of the food in the stomach itself †. But though the saliva is certainly not of such importance as it was formerly held to be, yet it is most probably of some use. It is, in fact, an animal fluid, and, consequently, it must promote the animalization of the food it acts upon. It is also possessed of saponaceous properties, which are favourable to solution ‡. At any rate, the saliva must be of some service,

---

[*] See Barry on Digestion, p. 7.

[†] See a Treatise on the Digestion of Food, by George Fordyce, M. D. p. 56.

[‡] With the pounded chewstick of the West Indies, it ferments violently, when that article is applied to the gums with a tooth-brush.

vice, in converting food into chyle, by the dilution which it furnishes *.

The saliva answers various useful purposes in the animal economy. 1. It moderates thirst, by moistening the cavity of the mouth. 2. Having itself neither taste nor smell, it enables the palate to distinguish the taste and qualities of the food taken. 3. During mastication, it mixes with the food, converts it into a soft and pulpy mass, and renders it fit to be swallowed. 4. It is probably also of use, in promoting the dissolution of the food in the stomach; and, 5. Having a great affinity to *oxygen*, or pure air, which it readily absorbs, and gives out again to other bodies, it is found to be an useful application to sores of the skin. Hence dogs, and other animals, have constantly resource to this remedy, and with much advantage †.

2. *The Gastric Juice.*—It is now ascertained, by the most decisive experiments ‡, that the dissolution of food in

---

* This is Darwin's opinion, who contends, that the saliva should be swallowed either alone, or mixed with our food, for the purposes of digestion. Darwin describes a disease which he calls *a torpor of the pancreas*, which was accompanied with indigestion, and which terminated in the death of the patient. He had been for many years a great consumer of tobacco, which he chewed all the morning, and smoked all the afternoon; and as the saliva, and the pancreatic juice, are almost the same, a sympathy may exist between the glands by which they are respectively secreted: hence, in process of time, the great waste of the one might injure the other. It is supposed that both assist digestion, by preventing the fermentation of the aliment. Darwin's Zoonomia, Vol. II. p. 80. and 701.

† See Hooper's Lexicon, *voce* SALIVA; and Thomson's System of Chemistry, Vol. IV. p. 611. It is of infinite importance to preserve the saliva in a healthy state, on account of the gums and the teeth.

‡ That digestion is principally owing to the gastric juice, is evident; because if pieces of food be enclosed *in close tubes*, they pass through the stomach without any farther alteration than would have taken place, at the same temperature, out of the body; *but if the tubes be perforated with small*

the stomach is principally brought about by the action of a particular liquid secreted by the stomach, and for that reason called the gastric juice.

This singular substance, it is supposed, attacks the surface of the bodies with which it is in contact, unites to the particles of them, which it carries off, and cannot be separated from them by filtration. Its action is increased by a warm temperature; and as it operates with more energy and rapidity the more the food is divided, hence arises the great advantages of a thorough mastication. Food thus subjected to the operations of the gastric juice, is not merely reduced by its attacks to very minute parts; but its taste and smell are entirely changed; its natural properties are destroyed; new and very opposite ones are acquired; and it becomes a substance of quite a different nature *.

The powers of the gastric juice, for coagulating milk, have been long known: for the infusion of the stomach of a calf has been employed, in all ages, for curdling milk, to form cheese †; but the great use of this article, as a general solvent of the alimentary substances in the stomach, is a modern discovery.

The quantity of gastric juice discharged into the stomach is

---

small holes, the food is converted into chyle. Thomson's System of Chemistry, Vol. IV. p. 694. Some imagine that the *mucus*, which is separated by the glands of the stomach, to defend its nerves from being too much irritated by any matter we may swallow, is also of use in digestion; but there is no proof of that being the case.

* Thomson's System of Chemistry, Vol. IV. p. 699.

† Fordyce on Digestion, p. 57. The human stomach also possesses the power of coagulating milk, in a very eminent degree. Half a dozen of grains of the human stomach, steeped in water, will afford an infusion that will curdle an hundred ounces of milk. Beddoes's Hygëia, Vol. II. p. 13.

is very great. It has sometimes been discharged from the stomach by vomiting, to the quantity of three, and even five pounds; and, in one patient, sixteen pounds of gastric juice, mixed with other fluids, were discharged in the course of a few hours *. In general, however, it is most copious, when solicited by the stimulus of food.

It is the gastric juice, operating upon, and irritating the coats of the stomach, which occasions the sensation of hunger; and it must injure that organ, if that powerful fluid is permitted to act on the stomach itself, instead of some alimentary substance which it was formed for dissolving.

Besides these important properties, in promoting the dissolution of food in the stomach, the gastric juice has been employed medicinally, in intermitting fevers, and for promoting digestion; and it is to be regretted, that its utility in these respects is not better known. Like the saliva, also, it has been applied externally, in the form of a fomentation or poultice, to cure putrid and scrophulous ulcers; in which it is said to have operated in a wonderful manner, so as to entitle it to more attention, in this point of view, than it has hitherto received †. Its effect on cancers ought also to be tried.

3. *Contractile powers of the Stomach.*—It was formerly imagined, that the food was prepared to furnish nourishment, by the mechanical action of the stomach; and Pitcairn and other eminent authors contended, that the stomach was possessed of *a grinding force, so immense*, that it was alone sufficient to produce all the changes which the aliment receives from it. That doctrine, however, is now in a

---

* Adair's Natural History of the Human Body and Mind, p. 164.

† Hooper's Lexicon, *voce* GASTRIC JUICE.

great measure exploded, though the muscular powers of the stomach must have some effect in digestion [*]. It is certainly of great use, that by its contractility it constantly adapts itself with accuracy to its contents, sometimes holding two quarts, and sometimes upwards of ten pints, and sometimes being filled with less than an ounce [†].

This power of contractility, however, is of essential importance in another respect, for, by that means, the stomach enjoys a *retentive faculty*, which is highly necessary to nutrition. For the transmutation of the aliment into chyme, not being performed in a moment, but the work of some hours, unless the food were retained in the stomach a competent time, till that work be finished, both the concoction, and the distribution afterwards, (without which there could be no nutrition), would be imperfect [‡].

4. *Heat.*—The heat of the stomach, in a healthy man, is greater than the common heat of the sun in a summer's day; and this appears, from many experiments, to be more proper for the digestion and dissolution of bodies, than a much greater warmth [§]. It is owing to the heat which the stomach requires, that too thin clothing seems to have a tendency to weaken that organ. In sedentary people, in particular, the belly is apt to feel cold from insufficient covering; and, in this respect, the ancient materials and fashions of dress have an advantage over the modern, particularly

---

[*] See Barry on Digestion, p. 12, 13, and 14. Also, Beddoes's Hygëia, Vol. II. Essay VIII. p. 8; and the celebrated Cuvier's Leçons d'Anatomie Comparte, Tom. III. p. 7, who states, that the movement and pressure of the intestinal canal, promotes digestion.

[†] Adair's Natural History of the Human Body and Mind, p. 160.

[‡] Charleton's Inquiries into Human Nature, p. 103.

[§] Barry on Digestion, p. 8.

ticularly in men. It is impossible that the region of the stomach should be habitually chilled, without injury to digestion*.

By these means, the food is formed into a soft pulpy mass called *chyme*, which passes from the stomach into the intestines, where it is subjected to new changes; but the operations of the stomach, terminate with the conversion of the food into chyme.

SECT. II.

On the Formation of the Blood.

THE succession of steps in the process of digestion, has been elegantly compared, by an ingenious author, to a very complicated manufactory, where the material, before it can attain the necessary perfection, passes through the hands of a multitude of artisans, each of whom, in his department, must do justice to the fabric, or else the whole labour will in a great measure be lost†. This observation is peculiarly applicable to the formation of that important article, *the blood.*

When the food is digested by the stomach into chyme, it is gradually pressed, (and there the contractile power of the stomach is of particular use), out of the stomach into the intestines, which generally happens in a period of from six to eight hours, and it is there converted into two substances; 1. Chyle; and, 2. Excrementitious matter.

---

* Beddoes's Hygëia, Vol. II. p. 56. In France, they are accustomed to wear a large *manchon* or muff, for the purpose not only of keeping their hands, but their stomach warm. But the cold in England is not so intense as on the Continent, hence such a practice is not so necessary in this country. Many, however, have found benefit from wearing a piece of flannel over their stomach. Though heat is so useful to the stomach, yet *warm rooms* are extremely pernicious to that organ, impairing the digestive powers, and bringing on habitual debility. Hygëia, Vol. II. p. 73.

† Beddoes's Hygëia, Essay VIII. Vol. II. p. 20.

The chyle is a bland juice, of a whitish colour, and very much resembling milk. It is separated from the excrementitious matter of the chyme, by means of two substances; 1. Bile; and, 2. The pancreatic juice, with both which the chyme is mixed in the intestines.

First. The bile is the most concocted humour in the whole body, and is a natural digestive, which possesses greater real virtues, than what the chemists have assigned to imaginary ferments and precipitants. It chiefly contributes, by its saponaceous activity, to attenuate the viscidity of the aliment, and to give to its disunited various parts, the first appearance of chyle, and of an uniform fluid *.

It is well known to physiologists, that there are two kinds of bile in the human body; the one, which flows immediately from the liver, called the *hepatic* bile, is thin, and only slightly bitter; whereas the other, which comes from the gall-bladder, and is called the *cystic* bile, (which is the bitterest humour in the body), is thicker, and more acrid. They are mixed together in the intestines, and both are of use in the formation of chyle, though they are not absolutely essential for that purpose †.

The quantity of bile discharged into the intestines of an

---

* Barry on Digestion, p. 27.

† It is proper to observe, that where the secretion of bile is defective, it does not appear that the nutrition of the body is thereby materially injured. See Abernethy's Surgical Observations, Note, p. 27; Beddoes's Hygëia, Vol. II. Essay VIII. p. 21.

adult, in the space of twenty-four hours, is, in general, about a pound and a half.

The bile has of late much engaged the attention of physiologists: on the whole, it would appear, (according to the doctrine of Fourcroy), that the alkali and saline ingredients of the bile combines with the chyle, and renders it more fluid, whilst the albumen and resin combining with the excrementitious matter *, gradually renders it less fluid. The bile also stimulates the intestinal canal, and causes it to evacuate its contents sooner than it otherwise would do; for when there is a deficiency of bile, the body is constantly costive †. Other properties and uses are also ascribed to the bile, of inferior importance ‡.

Haller suggests, that oil is necessary in our diet, to provide a supply of bile, which is mostly composed of an oily matter, and to the generation of which a constant supply of that kind of substance must be necessary §.

Secondly. The pancreatic gland, called in some other animals *the sweet-bread*, separates a large proportion of fluid, which is mixed with the bile, and tempers its acridity. It is supposed to flow continually, to the extent of about a pound in twelve hours. It is neither acid nor alkaline; but comes nearer to the nature of the saliva, of any humour in the body. By its diluting the bile, it renders it more miscible with the chyle, and enables it better to separate from the feculant matter *. It is also of use as a diluent; for the chyme or aliment, as digested by the stomach, is of a viscid nature.

---

* Abernethy's Surgical Observations, p. 27.

† Thomson's System of Chemistry, Vol. IV. p. 704.

‡ Doctor Adair says, that, 1. By its alkalescency, it corrects the acid tendency of our foods, especially vegetables. 2. It disposes our nourishment to acquire the animal nature. 3. It assists in dissolving such tough and glutinous parts of our food as have not been sufficiently changed by the powers of the stomach; and, 4. It blends and unites the oily and watery parts into an emulsion. Adair's Natural History of the Human Body and Mind, p. 176. We are also told, that it imparts a yellow colour to the excrements; thus the white colour of the fæces in jaundice, in which disease the flow of bile into the duodenum is entirely prevented. It prevents also the abundance of mucus and acidity in the primæ viæ; hence acid, pituitous, and verminous saburra are so frequent from deficient or inert bile. Hooper's Lexicon, *voce* Bile. It also conveys, according to Cuvier, certain superabundant principles out of the blood.

§ Falconer's Observations on some of the Articles of Diet and Regimen, p. 28.

Besides these juices, it is not improbable also, that the *succus intestinalis* is a principal agent in this period of digestion, although its qualities have not yet been inquired into; indeed, the investigation would be attended with difficulties almost insuperable †.

By these means the chyle, and the excrementitious matter, are separated in the smaller intestines. The first is then absorbed by a number of minute vessels called the lacteals, whilst the excrementitious matter is pushed along the intestinal canal, and at last thrown out of the body altogether.

After the chyle has been absorbed by the lacteals, it is carried by them into a pretty large vessel, known by the name of the *thoracic duct*, where it is mixed with another fluid called *lymph*, the nature of which is very little known, and thence is conveyed directly into the blood-vessels and lungs, where it undergoes other changes.

Numerous as these processes are, yet they are all essential for the purpose of digestion; and notwithstanding their

complicacy

---

* Adair's Natural History of the Human Body and Mind, p. 176. Mackenzie's History of Health, p. 305. Burton on the Non-naturals, p. 303.

† Abernethy's Surgical Observations, p. 25.

complicacy and number, yet it appears, from various experiments, that wholesome solid food, eaten by a person in health, will, in the space of six hours, be entirely discharged from the stomach, changed into wholesome chyle, and will begin to flow into the blood *.

On the subject of chyle, it is proper to make two additional observations: 1. That all the materials capable of serving for food must have one common property. Each must contain the principles of chyle; for, unless that liquid can be formed from those materials, by the stomach and its appendages, they can be of no use as nourishment †. 2. Our aliment is changed into chyle by a mixture of a number of animal juices secreted from the blood, and consequently is the more easily animalized ‡.

When the chyle is first admitted into the blood-vessels, it is of a milky colour; but this substance, as has been already explained §, in the course of its circulation, passes through the lungs, and comes in contact with the atmospheric

---

* Barry on Digestion, p. 54. Let any chemist endeavour to convert a turnip into blood, which the stomach and the other organs of the human body will do, and the necessity of a variety of complicated processes will appear the less to be wondered at.

† Beddoes's Hygëia, Vol. II, p. 23.

‡ It may be asked, what is the advantage of all these juices employed in digestion? in answer to which, it may be observed, that the quantity of saliva mixed with the aliment in the mouth, the liquor of the stomach, the bile, and the pancreatic juices, the quantity of lymph from the mesenteric glands, and the quantity of the lymph from the lymphatic vessels of the whole body, having been formerly animal juices, are of great use in preparing new matter for the nutrition of the body; and as the aliment we take, before it gets into the lungs, and is converted into blood, has been mixed with perhaps four times the quantity of animal juices, it is evident that but a small proportion of each meal gets into the system. Burton on the Non-naturals, p. 310.

§ See Part II. cap. 1. p. 196.

spheric air, which is drawn in by the organ. By that contact it not only receives that red or florid colour, by which arterial blood is distinguished, but also other properties serviceable to the human frame: thus the complete formation of the blood is effected; and, by these means, the immense variety of aliments which the bounty of heaven has provided on the earth, in the air, and in the waters, for the sustenance of man, is, by a wonderful mechanism, reduced at last to one red, uniform, vital fluid, proper to nourish and support the human frame *.

SECT. III.

The Process of Assimilation and Nourishment.

WE have now seen, says an intelligent author †, the progress of digestion, and the formation of the blood, in so far at least as we are acquainted with them. But for what purposes, it may be asked, is this blood employed, which is prepared with so much care, and for the formation of which, so great an apparatus has been provided? These questions may be thus resolved. The parts of which the body is composed, it has been already observed, are continually changing. In youth, they are increasing in size and

---

* Mackenzie's History of Health, p. 345. Such is the influence which this fluid is supposed to have upon our moral, as well as natural life, that greatness of soul and sentiment, every noble and heroic act, are attributed, almost proverbially, to a particular degree of excellence *in the blood*, transmitted down to us from the veins of our ancestors. Collignon's Inquiry into the Structure of the Human Body, p. 17.

† Dr Thomson. See his System of Chemistry, Vol. IV. p.

and strength, and in mature age, they are continually exerted, and consequently, perpetually liable to waste and decay. It is necessary, therefore, that materials should be provided, for increasing, repairing, or renewing the bones, the muscles, the ligaments, the membranes, and all the various organs of the body; and these materials should be in perpetual circulation, that they may be ready at hand whenever they are wanted. Accordingly, all the substances necessary for the human body, are laid up in the blood, circulated with it, and are drawn from that fluid, as from a storehouse, whenever they are required. The process, by which the different ingredients of the blood are made part of the various organs of the body, is called ASSIMILATION *.

Over the nature of assimilation, excepting that the process, in all probability, is principally carried on during sleep, the thickest darkness still hangs. There is no key to explain it; nothing to lead us to the knowledge of the instruments employed. The junction, however, of fractured bones, and the healing of the wounds of the body, put the existence of the process beyond the reach of doubt.

The process of assimilation, however, must excite the most unbounded admiration. It is incredible to think, that the precise substances wanted, are always carried to every organ of the body. A bone, for example, becomes diseased, and unfit for the use of the animal; a new bone is therefore formed in its place, and the old one is carried off by the absorbents. Whence comes it, that an unusual quantity of the material necessary for that purpose, is carried to that particular place; and by what wonderful agency is it, that the old, diseased, and imperfect materials, are carried off, and that a new bone is formed in their room? These are circumstances

---

* Thomson's System of Chemistry, p. 743.

cumstances beyond the reach of human understanding, yet miracles equally extraordinary, are every moment exhibited in the human frame.

SECT. IV.

Of the Excretions, or the Manner in which those parts of the Food, which are not necessary for the Nourishment of the Body, are disposed of.

IT is well known, that none but the finer, the more balmy, and the more nutritious juices of the food we take, are properly admitted into the system. The remainder is expelled; 1. By stool. 2. By urine; and, 3. By perspiration. These three discharges serve, to a certain degree, as substitutes for one another, and appear to have so far a common tendency *. But it is much better, when each of those emunctories fulfil, to their just extent, their respective functions. In regard to the nature of the other discharges from the human body, they shall be explained in the Appendix; but these more important evacuations, must be dwelt upon at some length.

1. STOOL †.

The excrementitious matter which is evacuated *per anum*, consists of that part of the food which was not converted

---

[*] See the Introduction to the Study of Animal Economy, by Cuvier, translated by J. Allan, p. 33.

[†] A very great difference is observable in different constitutions, in regard to the evacuations by stool. One man never went but once in a month;

verted into chyle. It is entirely altered from its original state, partly by the decomposition which it underwent in the stomach and intestines, and partly by its combination with certain articles furnished by the bile. Analogy would also lead us to refer it, in some measure, to the effects of a secretion from the lining of those intestines in which it takes place *.

That the body should be enabled to discharge the useless, and, indeed, noxious matter, which all solid aliment, in a greater or lesser degree contains, is one of the most extraordinary circumstances in nature, and is a sufficient proof of the wonderful art and contrivance with which the human frame was formed. If that matter is only retained in the body beyond the proper time of evacuation, what serious consequences result from the retention; the whole body becomes disordered, the appetite is lost, and food itself, at other times so acceptable, is turned from with disgust.

In discussing this part of the subject, it may be proper to consider the following particulars. 1. The rules regarding this evacuation, when the body is in a healthy state. 2. The rules to be observed when the body is costive, or the evacuation scanty or irregular; and, 3. The measures to be adopted, when the discharge is too abundant.

1. GENERAL RULES.

A regular evacuation should take place every morning after breakfast. There is no rule in the medical department

---

month; another had twelve stools every day for thirty years, and afterwards seven in a day for seven years, and in the meantime, did not fall away, but rather grew fat. See Heberden's Commentaries of Diseases, p. 16.

* Abernethy's Surgical Observations, p. 36.

ment of equal consequence. Habit renders it almost always possible, and the attempt to enforce the rule, should on no account be neglected.

The best means of promoting this evacuation, are as follow: 1. A due attention to bodily exercise. 2. A quantity of drink, in proportion to our victuals, to be taken when cold, as warm diluents have a manifest tendency to increase obstructions, by the relaxation they produce in the intestines. Water, either pure, or mixed with white wine, or weak, well fermented, and well hopped beer, are excellent beverages. 3. A proper choice, and a proper quantity of solid food, which should be tender, but not young or viscid; and the vegetables and meat ought to be prepared together in mild broth, so as to render the use of melted butter unnecessary. 4. Too much indulgence in sleep is hurtful to persons whose digestion is languid, and evacuations are slow. It has a tendency to promote a discharge by the skin, at the expence of that by the bowels. 5. All strait garments ought to be abandoned, especially laced stays, and tight waist-bands *.

There is every reason to believe, that most of the disorders incident to females, take their rise from neglect in regard to this necessary evacuation, and that certain death, either lingering or immediate, is frequently the consequence of false modesty. Nothing, therefore, is more essential to the fair sex, than not to suffer their healths to be injured, by inattention to the necessary calls of nature †.

It is very unfortunate to be disappointed, when nature requires this evacuation. The inclination, when once lost, does

---

* Willich's Lectures on Diet and Regimen, p. 513.; and Turnbull's Medical Works, p. 138.

† Taylor's Remarks on Sea-water, p. 62.

does not recur for some time, and the bowels are provoked in vain, to resume their action, till another day.

The fæces, in a natural state, should be of a due consistence, between the two extremes of hardness and looseness; '*oportet sanorum sedes esse figuratas.*'

It has been remarked, that the alvine discharge in general, increases in the ratio of from 26 in summer, to 40 in harvest; and, as it is, on the whole, the most weakening of all the natural healthy evacuations, hence it is, that people, in general, are the weakest in autumn, and the least able to bear any evacuation or exertion *.

Rising early, and going abroad in the open air, is favourable to regularity in this respect. Not only the posture in bed is unfavourable to regular stools, but also the warmth, which, by promoting perspiration, lessens all the other discharges. This is one of the strongest arguments in favour of early rising.

2. *Costiveness.*—When the stools are either scanty or irregular, the body is said to be costive; and hence many disorders arise, as headachs, toothachs, difficult breathing, flatulency, eructations, spasms, palpitations of the heart, &c.; hence peevishness of temper, general lethargy, and at length hypochondriasis.

Costiveness, in common cases, proceeds from various causes, as from the nature of the food, being often of a dry and indigestible nature, as dry bread † and cheese; from the heat of the air; too much exercise, especially on horseback; from a long use of cold insipid food, which does not sufficiently stimulate the intestines; from drinking rough red wines, and other astringent liquors; and sometimes from a deficiency of bile and other juices, in the stomach and intestines. It is also occasioned by keeping the body too warm; by wearing flannel; by other means of promoting perspiration, as lying too long in bed, &c.; by excessive labour, and the great quantity of perspiration occasioned thereby, being generally found with hard working people, who have abundant discharges by their skin; by intense thought; by sadness, grief, and a sedentary life *. It is also frequent in old age, from the diminished powers of the body.

---

* Short's Observations on Bills of Morality, p. 139.

† London bread has a great tendency to promote costiveness. It is commonly watered with a solution of alum, to save salt, and to give it whiteness. Pieces of undissolved alum have often been found in London bread; and the dealers in alum, will in general acknowledge, that they sell more of that article to the baker, than to all the other manufacturers put together.

Costiveness, however, is also occasioned by other causes, as by a deficient state of the bile, owing to the want of that natural stimulus in the intestinal canal; sometimes by lead in various forms, and the fumes of quicksilver, which often occasion it in painters and other workmen, who, in their several trades, make use of those metals; it sometimes follows a blow, or a sprain in lifting a great weight; in this case, blood or matter is voided with the hardened fæces; in some violent cases of that sort, costiveness has continued a fortnight or a month; and one patient (a painter) had no stool for three months. Painters in oil colours, are subject to the colica saturnina, or dry belly-ach, with obstinate costiveness. Calomel is the antidote to the poison of lead, and butter milk the best restorative. It is proper to observe, as an encouragement to exertion, and an antidote

---

* Buchan's Domestic Medicine, p. 390.

The late Doctor Donald Smith of Edinburgh, the best Celtic scholar of the age, though a medical man, fell a sacrifice to costiveness.

dote to despair, that in none of these cases did the disorder prove fatal *.

The fæces are sometimes hardened into lumps called *scybalæ*, which are obliged to be extracted from the rectum with a kind of marrow spoon †; in one case, this is said to have happened, from the patient having taken much rust of iron ‡.

Costiveness, even to a considerable extent, will prevail in the robust and otherwise healthy people, without immediate injury; but this constitutional costiveness is of dangerous tendency, and it is desirable to rectify it §. Persons of that description, who do not go to stool above once every fourth day, or once a-week, can never preserve themselves sound for any considerable space of time ||.

When an eminent physician, Sir Charles Scarborough, was consulted by the Duchess of Portsmouth, what remedy he would recommend for this complaint, he jocosely answered, 'You must eat less, or use more exercise, or take physic, or be sick.' The modes of removing costiveness, however, are more numerous, and may be considered under four general heads: 1. Habit. 2. Useful practices. 3. Diet; and, 4. Either gentle or violent medicine.

1. The celebrated philosopher Locke, who was himself a physician, has entered much at length into this subject. He

---

[*] See the Works of William Stark, M.D. p. 15.

[†] An eminent surgeon, it is said, has invented a kind of bougie, which facilitates this operation.

[‡] Darwin's Zoonomia, Vol. II. p. 38.—Does not this fact furnish a hint, that the rust of iron may be of use in fluxes?

[§] Hamilton's Observations on Purgative Medicines, p. 9.

[||] Forster's Treatise on the Causes of most Diseases incident to Human Bodies, p. 334.

He observes, that going to stool regularly, has a great influence on the health, and he asserts, that if any person, after his first eating in the morning, would presently solicit nature, so as to obtain a stool, he might in time, by a constant application, bring it to be habitual. He adds, that he has known none, who have been steady in the prosecution of this plan, who did not, in a few months, obtain the desired success, and brought themselves to a regular habit *.

Costiveness is sometimes owing to the use of flannel, which, by increasing the perspiration beyond what nature requires, dries up the humours, and absorbs the fluid particles of the body. To prevent that error, where flannel must be used, it ought to be thrown off at night; by which, perspiration will be considerably diminished.

2. An ancient practitioner in physic, often advised those who were costive, and went to stool with great difficulty, to sit over a pot with hot water in it; which soon was attended with an easy dejection or stool; the body drawing up the vapour, which provoked expulsion of the excrements without much straining †. It is said, that what are called *steam boxes*, have recently been invented for that purpose.

3. Costiveness also may be removed by a moistening and laxative diet, as ripe or cooked fruits; for instance, roasted or boiled apples, pears, stewed prunes, raisins; gruels with currants, butter, honey, sugar, and such like; broths with spinage, leeks, and other soft pot-herbs; also the beet-root and the turnip are proper; bread made of fine

---

* See Locke's Thoughts concerning Education, par. 23, 24, 25, 26, 27, 28, where the subject is very fully discussed; it is a treatise which, on many accounts, merits the attention of parents.

† See Smith's Curiosities of Common Water, &c. p. 49.

flour ought to be avoided; rye bread, or a mixture of wheat and rye is preferable.

The drink should be of a mild aperient nature; malt liquor, if fine, and of a moderate strength, is very proper; butter-milk, whey, and other watery liquors, are likewise proper, and may be drank in turns, as the patient's inclination directs [*].

The use of the expressed oils of mild vegetables, as olives, almonds, pistachios, and the like, are also strongly recommended by the celebrated Arbuthnot, and I have known them used with success [†]; he also recommends animal oils for the same purpose [‡].

Bathing, likewise, has sometimes been found of service in removing costiveness.

As obstructions and costiveness are often owing to a luxurious mode of living, and to the custom of making too many meals through the day, we ought never to take a new supply of food till the preceding meal be digested [*].

---

[*] Buchan's Domestic Medicine, p. 390.

[†] A friend of mine, inclined to be costive, after consulting the most eminent physicians he could meet with, at last adopted the following plan, which he has found an effectual remedy for that complaint. He takes three full table spoonfuls of olive oil, nearly one spoonful of vinegar, and the yolk of two boiled eggs, to which he adds a little common salt. He eats this at dinner, with salad, in the spring and summer, with boiled pease or beans in the autumn, and with raw cellery in the winter. This prevents costiveness, and is, at the same time, a nourishing diet.

[‡] Arbuthnot on Aliment, p. 248.—A proportion of oil in our aliment, appears also to be requisite to keep the alvine evacuations in a regular state. Whether this effect be produced by its lubricating the bowels, and thus facilitating the passage of the food through them, or by its assisting to general bile, or to form the natural mucus of the intestines, I cannot determine; but, from repeated experience, I have good reason to think the fact sufficiently ascertained.—Falconer's Observations on some of the Articles of Diet and Regimen, p. 30.

Those whose bowels are irregular, ought to be dissuaded from an habitual use of purgatives. When persons have too frequent recourse to medicines for preventing costiveness, they seldom fail to ruin their constitution. Purging medicines, too often repeated, weaken the bowels, hurt the digestion, and every dose makes way for another, till at length they become as necessary as daily bread; hence a relaxation of the bowels, loss of appetite, wasting of the strength, and death. Those who are troubled with costiveness, ought rather, if possible, to remove it by diet than drugs. They should likewise go thinly clothed, and avoid every thing of an astringent, or of a heating nature [†].

Fourthly, But as medicines are too often necessary, it may be proper to consider what are the best calculated for removing this complaint.

Galen has called bleeding and purgation the two legs of physic. The first ought certainly to be cautiously administered; and purgations, though less dangerous, ought not to be rashly prescribed [‡], for they not only are the means of discharging the noxious substances in the stomach and intestines, but with them, those juices which tend to nourish us, or promote the digestion of our food. The division of purges, as having an effect on one kind of humour, and not another, is now exploded as imaginary [§].

The

---

[*] Willich's Lectures on Diet and Regimen, p. 512.

[†] Buchan's Domestic Medicine, p. 117.

[‡] Celsus says, 'Sed purgationes quoque, ut interdum necessariæ sunt; sic, ubi frequentes sunt, periculum afferunt.'

[§] Feyjoo's Rules for Preserving Health, p. 33, where he quotes the sentiments of several great medical authors hostile to purgation.

The pernicious effects resulting from the abuse of purgative medicines, are certainly great. They affect not only the stomach and bowels, but the system at large; and sometimes the finer particles of medicines are taken into the habit and mixed with the blood; which can be of no service to that valuable substance *.

Purgatives are of two sorts, lenient and drastic. Manna is an example of the one, and scammony of the other †.

In

---

* See Anderson's Medical Remarks on Natural, Spontaneous, and Artificial Evacuation, p. 18.

† An intelligent friend has sent me the following observations on the subject of purgatives.

When the lacteals are scoured, and their mouths are in a condition to absorb,—nutrition, with increase of strength, cannot fail to be the consequence.

In the choice and exhibition of cathartics in the human frame, much attention and discretion are required.

The drastic purges act as hydragogues and do not increase our strength. They pass rapidly through the alimentary canal, produce a copious discharge of lymph, but they do not carry off that viscid mucus, by which the lacteals are clogged in various cases of disease. These drastic cathartics are gamboge, scammony, and jalap, &c.

The most efficacious deobstruent we possess is calomel. Two or three doses, of from three to five, six, eight, or even ten grains, given at night, and at proper intervals repeated, carry off viscid mucus beyond any other cathartic with which I am acquainted. In the exhibition of this medicine, with this intention, the use of acids must be for the time prohibited, because they would make the calomel too active, and defeat our purpose. The intervals of exhibition should be three or four days.

Next to calomel, colocinth seems to have most power in cleansing the first passages, and next to this, in my opinion, comes senna.

After calomel, rhubarb strengthens the digestive organs, and restores their tone; but as it is apt to induce costiveness, this may be prevented by aloes, which is likewise a powerful detergent.

Were I to give the observations I have had an opportunity of making during forty years, on the efficacy of cathartics in preparing the digestive organ for nutrition, and in thus restoring strength, they would fill a volume.

Nature seems to have abandoned the alimentary canal to our prudence

and

In giving purgative medicines, the articles should be so combined as to excite and strengthen at the same time. Thus, rhubarb, columbo, and kali vitriolat. may be given together, or an infusion of gentian with senna, or tincture of rhubarb *.

A course of purgatives for reducing corpulency, for bilious complaints, or any other disorder, ought to be very cautiously adopted, and never without the best medical advice. Many have died from this injudicious practice †.

If the stomach is disordered, but not in a very violent degree, the following mixture may be taken with great advantage. One tea spoonful of best rhubarb—two ditto of

magnesia

---

and discretion. This undoubtedly is the part most accessible, not merely to food, but to medicine also; and no medicine can exert its influence, unless it can come in contact with the living fibre. This, however, is apt to be covered by a superabundance of viscid mucus. The design of nature, in the provision of mucus, discharged from appropriate glands, is to prevent attrition and abrasion, the consequence of which would be adhesions. But unfortunately, by some neglect, by some excesses, or by some error in the non-naturals, these glands are frequently relaxed, and pour forth a superabundant quantity of mucus, which render the living fibre inaccessible to such medicines as might restore tone to the system. This, then, must be removed, that having gained access to the living fibre, we may administer such medicines as the occasion may require.

This has been the foundation of my practice among the poor, and, to a friend, I may venture to say, that I have remarkable success. They apply to me in time, and I very seldom lose a patient.

* Abernethy's Surgical Observations, p. 65, where there are other useful observations regarding purgative medicines.

† Adair's Essay on Diet and Regimen, p. 115. Two cases are there mentioned, of persons who died from an injudicious course of purgatives. A case is also mentioned, of a lady who, for removing costiveness, had proceeded from weaker to the strongest purges, but whose stomach and bowels were restored to their former power, solely by the use of Bath waters in large doses.

magnesia—one table spoonful of brandy—three table spoonfuls of warm water—mix the whole thoroughly together with a little sugar. It may be taken either at night, or very early in the morning; and unless the stomach is very much disordered, the patient will be so well recovered the next day, as to have a hearty appetite for dinner.

The nature of the remedy for costiveness ought to change with the age of the individual. The late Lord Howe had been accustomed for twenty years, to take Glauber salts as a laxative for habitual costiveness, but it was found too cold a purgative when he got old *.

When medicine must be taken, some recommend gentle doses of rhubarb twice or thrice a week; but without the mixture of some other article, as magnesia, it is apt to be binding †. Others have strongly recommended sulphur ‡, and

---

* Trotter's Essay on Drunkenness, p. 116.

† An intelligent physician, (Dr William Wright) has recommended the following pills as an excellent remedy against costiveness:

Pilulæ Aperientes.

℞ Aloes Succotrinæ, drachmas duas.
Gummi Gutæ Gambogiæ.
Saponis Hispanici, ana drachmam unam.
Calomel ppt. gr. xv. Syrupi Albi q. s. ut fiat massam Pilularum. Divide in Pilulas, No. 54, Capiat Pilulam unam hora decubitura, & pro re nata repetatur.

Some have found the following cathartic draught of service.

℞ Infus. Sennæ, Tart.	℥ i ß.
Tinct. Sennæ,	ʒ ij.
Tinct. Jalap.	ʒ ß.
Syr. Rosæ,	ʒ i. M. pr. hour.

‡ The uses of sulphur, both for stomachic and other complaints, are not perhaps so generally known as they ought to be. An intelligent correspondent has transmitted to me the following particulars regarding it:—1. He has prescribed it successfully for rheumatism: The sulphur was poured upon boiling water, and after standing twenty-four hours, the liquor was drank in place of any thing else. The patient was, at the same time, dressed in flannel, and abstained from salted fish and flesh. This has

and it is said that the odour which it is apt to give may be entirely prevented by steeping it in water for some time *.

The celebrated Doctor Warren was often applied to, for a remedy to cure indigestion, by those who were tempted, by the luxurious tables of the metropolis, to eat more than their stomachs could naturally digest; and he was accustomed to prescribe a pill on such occasions, the receipt for making which, coming from such great authority, I thought it right to preserve, though I understand that the remedy is better calculated for the strong and healthy, when they commit an excess, than for the common indigestions by which weak stomachs are apt to be affected.

℞ Pulv. Fol. Sennæ, ʒi.
Scammonii, gr. xv.

---

has completely answered, when other remedies have failed. 2. A gentleman also was cured of the gout by taking sulphur and China oranges. The mode of taking it is, pour boiling water upon the sulphur, then let it stand a day or two in a bowl, then pour off the water, and take the sulphur in milk. This gives next day a copious loose stool, free from gripping. If taken in such a quantity as to purge, by drinking new milk, it will go off as easily as a dose of salts, and in three days no smell is emitted; to prevent which, in some degree, also, the sulphur is sometimes put in milk, and mixed with four or five drops of peppermint. 3. It is a specific for the piles, dissolved in Florence oil, mixed with honey, and thickened with wheat flour, and pushed up, or laid to the fundament, purging the patient at the same time, with sulphur. 4. It is the best resource against a costive habit. 5. It is good, as an alterative, when mercury fails, in venereal complaints. 6. It is also a good remedy in the case of green-sickness. 7. It is proper to be cautious against catching cold; at the same time, some people have taken sulphur and bathed on the same day. 8. It is certainly a most important medicine in a variety of complaints, thinning the blood; clearing all obstructions; promoting perspiration, and the other evacuations at the same time; and, were it scarce, it would be sold for two guineas a pound.

* Sennertus recommends a strange remedy for costiveness; that of walking, barefooted, in a cold floor. See Strother's Essay on Health, p. 338.

Ol. Caryophile Aromat. Gtt. iv.
Mucilag. G. Arabic, q. s.
In Pilulæ xv equibus Sumat. duos omni Nocte.

As far as my own experience goes, when the stomach requires a constant aid, a table spoonful of white mustard seed, taken at bed-time, in milk, and the seeds a little bruised by the back of the spoon, is an old but useful remedy, the whole seeds acting mechanically, and the bruised ones giving a stimulus to the stomach and intestines; or, take in the morning, one spoonful of castor oil, one of brandy, and one or two of water, in which some sugar has been melted, and a useful dose will be obtained.

These hints are given with diffidence; but, it has been well observed, that in serious diseases, the advice of an able physician is indispensable; but life is often rendered unhappy, by slight maladies, for which light remedies are the most effectual *.

Instead of medicine, some are accustomed to take glysters or injections; and many, by the use of them at a stated hour, have brought on a regular habit of evacuation. It is said, that the first hint for this practice was taken from the bird ibis, or the stork, which, by means of its beak or bill, when nature indicates the necessity of a motion, conveys salt water up its anus. In France this practice is very frequent, and is known under the name of *Lavemens des precautions*. They are intended to prevent vapours in the head, to relieve the stomach and intestines, and to create an appetite. They also enable a person to attend to any business or pleasure, at a certain hour every day, without any risk of being interrupted. It is acknowledged, however, even by the French, to whom this practice is so familiar,

---

* Pinkerton's Recollections of Paris, Vol. I. p. 302.

liar, that it is dangerous to get into any regular habit of using such precautions *.

Asclepiades, and some others of the ancients, were of opinion, that glysters were sufficient in most distempers. They influence the mass of blood; for they quicken the pulse, and facilitate the secretions of sweat and urine. Therefore every thing foul or incongenite should be as carefully withheld from the intestines as from the stomach †. The glysters, however, ought to be mild, so as not to irritate the intestines.

In a recent publication, the use of glysters of cold water, has been strongly recommended for costiveness, when occasioned by parched extremities, or when the whole skin is dry and heated, owing to an unkindly and consuming species of slow fever; and such injections, it is said, have not only given relief when the stools were costive, consisting of hard lumps covered with mucus, but they have also prevented that constricted state of the bowels, by which the hardened and divided stools seem to be formed ‡.

Before the subject of purgative medicines is concluded, it may be proper to make some observations on a doctrine inculcated by the celebrated Lord Bacon, that nothing contributes so much to health and long life, as frequent and domestic purgations, and also to state some opinions recently published, recommending drastic purges as the most effectual remedy for various disorders.

---

* Le Medicin des Hommes, p. 406.

† See Anderson's Medical Remarks, p. 56.

‡ Old people, however, should be extremely cautious not to live always upon the same laxative food, or to take *the same purgative remedies*, lest, becoming too familiar to the body, they may not always have the same effect.

Lord Bacon's position is, "*Nil tam ad sanitatem, et longevitatem conducit, quam crebræ, et domesticæ purgationes**."

It is a common observation, that few men are strictly temperate when they sit down to pleasant food. Hence it comes to pass, that want of health is a frequent attendant upon affluence. Disease, however, and premature decay, are not the peculiar inheritance of wealth. All men are disposed to exceed the bounds of moderation, and to overload the alimentary canal. In such circumstances, the best preservative against disease is, to hasten the discharge of this superabundance from the body, by some slight cathartic, such as may give relief, without impairing the powers of digestion.

As we advance in years, moderation becomes more essentially needful to the preservation of health. Till we have arrived at the acmé of our growth, a constant supply is to be provided, not merely for reparation of daily waste, but for increase of bulk. After this period, the quantity of food should be diminished; because one principal purpose of the increasing demand has been completely answered, and nothing remains to be provided for but the daily waste. Should, however, the supply of aliment continue undiminished, this superabundance, if digested, and received into the system, must increase the bulk and corpulency of the individual, produce immoderate repletion of the vessels, and tend to bring on apoplexy, which may terminate either in palsy, or in death.

Nature herself suggests to us the necessity of temperance, and provides a remedy against repletion. For, as from our infancy till we arrive at maturity, the number of teeth are constantly increasing, and with our increasing years, new grinders are produced; so, when we have reached our acmé, the last acquired teeth are the first in their decay, and in our decrepitude, not one tooth probably remains.

---

* Manual of Health, p. 282, 283, &c. In page 284, there is an amusing story connected with the subject of *lavements*, regarding the lively and amiable Duchess of Burgundy, who was the Rosalind of the court of Louis XIV. and who was accustomed to take them previous to her going to the theatre.

It is well understood, that plethora produces palsy.—What precaution then can be applied, what remedy provided, against immoderate increase in bulk and repletion of the vessels? Next to occasional abstinence, or habitual temperance, none can be so effectual as that recommended by Lord Bacon, the 'Crebræ et domesticæ purgationes.'

So much for plethora, and for the diseases attendant upon it, as their immediate cause.

But independently of this, should the intestines themselves be overloaded, various diseases must be the consequence. Among these, and not the least formidable, is to be reckoned apoplexy, so fatal to both young and old, who, beyond the bounds of moderation, indulge their appetite for food.

The apoplexy here described, is not the same with that species which is attendant on plethora; but may be produced, either by the pressure of a loaded stomach on the descending aorta, or by spasmodic stricture of the diaphragm, in that part through which this artery descends.

The proper remedy for this repletion of the bowels is temperance; but as the bowels are occasionally torpid, more especially in old age, the remedy proposed by Lord Bacon will here apply, and it will be found, that

Nil tam ad, &c.

The greater number of the human race perish, however, by acute diseases, cut off before the maturity of age.

Acute diseases are commonly attended by inflammatory symptoms, at least at their commencement; and these never fail to be aggravated, when the intestines happen to be loaded with undigested sordes. Hence, on their first attack, the expert physician is ever anxious to begin his operations, by evacuating the alimentary canal. But, frequently, it happens, that he is called in too late :—the strength of the patient has been exhausted by the disease; and the whole class of evacuants must then be most sparingly applied.

Now, had the patient either been sufficiently temperate in his quantity and choice of food; or had he been in the habit of cleansing, from time to time, the alimentary canal, by domestic physic, he would not stand in need of powerful evacuants, such as the cautious physician is unwilling to apply, at the commencement of his disorder, and consequently would not only have escaped many dangerous diseases, to which he must otherwise be constantly exposed, but, in case of their attack, would, under proper management, have the greatest probability of cure. Hence arises a full conviction, that *nil tam*, &c.

These observations on Lord Bacon's aphorism, for which I am indebted to an intelligent friend, must be perused, by the reader, with satisfaction and benefit.

We shall now proceed to the other point that remains to be considered, namely, the exhibition of powerful purgative remedies in disease.

A respectable physician has recently published a work on purgative medicines, in which he remarks, that, by preserving at all times a regular alvine evacuation, we would prevent the formation of various disorders altogether; and that purgative medicines, properly applied, are the best means of curing them; and the facts he adduces, serve very strongly to corroborate the doctrine he wishes to establish *.

---

* See Observations on the Utility and Administration of Purgative Medicines, by James Hamilton, M. D. p. 140.

Dr Hamilton observes, (p. 6.), that the constipated and loaded state of the intestinal canal, is a common cause of general bad health; often accompanies and aggravates the other symptoms of fever; is the immediate source of various disorders peculiar to children and young people; and also occasions other serious complaints, which arise in mature age, and in the decline of life *.

It is necessary, he justly remarks, for those, who either wish to preserve good health, or who are in quest of the lost treasure, to attend to, and to regulate their alvine evacuations †.

It may be proper, he adds, on some occasions, to propose to them, to forsake the haunts and habits of fashionable life, to leave the crowded city, alluring amusements, or serious occupations, conducted in airless, or even in tainted rooms; to shun luxurious tables, indolence, and late hours; to retrace the footsteps by which they have deviated from simple nature; and to court the country, pure air, moderate exercise, and simple diet ‡.

This advice, however, cannot be always followed, and it will not always remove costiveness, and the ills which proceed from it. In this case, as well as the costiveness which accompanies disease, the interposition of purgative medicines is necessary.

2. *Looseness.*—Stools, however, may not only be too hard and scanty, but they may be also too loose and abundant: hence arise what are called fluxes, disorders in the bowels, diarrhœa, &c.

---

* I have found a purgative of use in colds, when the stomach was loaded with phlegm.

† P. 7.

‡ Hamilton's Observations on Purgative Medicines, p. 7.

These are unfortunate complaints; for, as Cheyne has justly remarked, those who have slippery bowels can never get strength [*]; and, bad as costiveness is for the weak or the aged, yet they can bear a costive habit much better than fluxes or purging. At the same time, it is proper to observe, that fluxes are sometimes the salutary efforts of nature to rid itself of pernicious substances [†]. Such discharges must be of use, when the habit is full; and an eminent physician has therefore recommended it as a useful caution, not to be too hasty of stopping a recent spontaneous purging, as they may frequently be useful, and it may be found advisable to co-operate with nature, in promoting this evacuation [‡].

Looseness is often the effect of immoderate eating [§]. Part of the food, not being properly digested, passes off in this way, and nature thus relieves herself of a load, for which she had no occasion. Great eaters are, owing to this circumstance, generally thin and emaciated, and possess less strength, than those who take a moderate meal, which is afterwards properly concocted *.

---

[*] Essay on Health, p. 38.; and Locke observes, that people who are very loose, have seldom strong thoughts or strong bodies.—Thoughts on Education, sec. 23.

[†] An old woman, Elizabeth Alexander, now living in London, aged above 100, is periodically liable to a relaxation of the bowels, after which she always enjoys for a time better health.

[‡] See Heberden's Commentaries on the History and Cure of Diseases, p. 145.

[§] During the hot seasons of the year, bowel complaints are apt to become frequent. They are of various degrees, and, if not early checked by medical aid, they generally terminate, either in violent and exhausting evacuations, of a hot bilious liquid, both upwards and downwards, which has obtained the name of *cholera morbus*, or in a disorder still more dangerous, when the bowels become obstinately constipated, and acutely painful. Such complaints are often attributed to the fruits of summer and autumn, but erroneously, if they are not abused; but if the sources of one indigestion are heaped upon another, for instance, if after a plentiful dinner, the stomach is overloaded with a great quantity of fruit, what can be expected, but the effects of repletion. The consequences are attributed to the desert, and not to the dinner, *whilst it is the excess of both* that has done the mischief. Manual of Health, p. 303. and 304.

As an habitual looseness is often owing to an obstructed perspiration, persons affected with it, ought to keep their feet warm, to wear flannel next their skin, and take every other method to promote perspiration †.

Such persons as are troubled with an habitual looseness, ought likewise to suit their diet to the nature of their complaint. They should use food which braces and strengthens the bowels, and which is rather of an astringent quality, as wheaten bread, made of the finest flour, or rather biscuit, cheese, eggs, rice boiled in milk, with some cinnamon in it, for breakfast. Their drink should be red port, or claret, instead of white wine ‡.

Persons subject to diarrhœa, cannot be too cautious in the use of watery, saline, and easily fermentable articles of food and drink; and they ought to avoid violent fits of anger, and the indulgence of other passions. On the contrary, they will promote their health, by using provisions of a drying nature, drinking either very bitter and well-fermented beer or ale, or, if they can afford it, good old wine; all of which have the beneficial tendency to promote perspiration, and thus prevent superfluous humidity in the body §.

In

---

* Turnbull's Medical Works, p. 133.

† Buchan's Domestic Medicine, p. 118.

‡ Ib. p. 118.

§ Willich's Lectures on Diet and Regimen, p. 515.

In common complaints of the bowels, the following remedy may be tried.—Let 15 grains of rhubarb be put into a table spoon, and filled up with rum: set fire to the rum, and let it flame till it can burn no longer: then mix it with 15 grains of magnesia, and 5 drops of laudanum; and take the whole, at night or morning, in a wine glass, full of peppermint water.

Such complaints, however, are not to be trifled with, but the best medical advice should be taken early, to check or remove them, as may be judged necessary, by the aid either of regimen or of physic.

2. URINE.

Urine is formed, by the operation of two organs of the body, called the kidneys. A very great proportion, if not the whole of the blood, passes frequently through these organs, in the course of which, they separate the urine from the blood, and transfer it to the bladder. This is for the purpose of its being immediately evacuated, without being applied, after it is received into the bladder, to any purpose useful to the animal.

No animal secretion has attracted more attention than urine, both on account of its supposed connexion with various diseases, and on account of the very singular products which have been obtained from it. Chemists have found in healthy urine, no less a number than seventeen different substances; but when it is diseased, the number is increased; and when it is putrified, a variety of new products are found in it *.

The

---

* See Thomson's System of Chemistry, Vol. IV. p. 642, &c.

The formation of urine, is of infinite consequence to the animal economy. By the preparation of that substance in the kidneys, the blood is cleared from too great a quantity of saline matters, and from a variety of putrid particles which would be noxious to the body. Indeed, of so much importance is the separation of urine from the blood; and the changes produced therein, by the action of the kidneys, is so essential for qualifying the blood to answer the purposes for which it was intended, that if the kidneys are unable, from disease, to perform their functions, the animal must perish.

The evacuation of urine, and of the acrid and deleterious particles which it contains, is absolutely necessary for the preservation of health, and ought not, on any account, to be postponed *. *Sennertus* relates, that a celebrated mathematician, (Tycho Brache), being confined in the company of women for a great while, and too bashful to mention the want he was under of making water, kept his urine so long in the bladder, that it brought on an inflammation, of which he died †, Many others have lost their lives, and brought on tedious, as well as incurable disorders, by retaining, from a false delicacy, their water too long. When the bladder has been over-distended, it often loses its power of action altogether, and becomes paralytic, by which means it is rendered unable, either to retain the urine, or expel it properly. The calls of nature, therefore, ought never to be put off. Delicacy is, doubtless, a virtue; but that never can be reckoned true delicacy, which induces any one to risk his health, or to hazard his existence[*].

---

* A young lady, confined in a stage coach for many hours, by keeping her water too long in the bladder, brought on an almost fatal suppression of urine. It was happily removed by the use of the hot-bath, the best remedy on such occasions. Valangin's Treatise on Diet, p. 172.

† Probably it was a paralysis of the bladder, which, it is said, was the cause of the celebrated Dr. Fothergill's death.

As a free discharge of urine not only prevents, but actually cures many diseases, it ought by all means to be promoted; and every thing that may obstruct it should be carefully avoided. Those who have reason to suspect that their urine is in too small a quantity, or who have any symptoms of the gravel, ought to avoid every thing that has a tendency to lessen the quantity of that evacuation.

It is less dangerous to suppress the evacuations by stool, than those by urine; for if the latter remains too long in the bladder, it becomes acrid and corrosive[†].

Many maladies arise from voiding too small a quantity of urine; as disorders in the bladder, in the kidneys, &c. nay it destroys even the small vessels of the brain, and occasions apoplexy and death[‡]. Hence the indispensable necessity of attending to this secretion. Robust persons eject less urine than the debilitated; a copious emission of it is always a symptom of a relaxed body, which is not possessed of sufficient energy to expel its noxious particles by transpiration through the cutaneous vessels[§].

---

[*] Buchan's Domestic Medicine, p. 119. In a work lately printed at Paris, there is a section—' *De l'importance de satisfaire aux besoins naturels*,' in which there are the following just remarks. ' Les femmes sont souvent victimes d'une fausse honte, que l'intérêt de leur santé, mieux entendue, leur ferait surmonter facilement. On a vu des maladies incurables, et meme mortelles, occasionées pour avoir retenu trop long-tems son urine, &c. Dans sa voiture, dans les voitures publiques, dès que le besoin se fait sentir, il faut faire arreter, descendre, et le satisfaire.' Medecine du Voyageur, par le Docteur Duplanil, Tome I. p. 63.

[†] Willich's Lectures on Diet and Regimen, p. 519.

[‡] Burton on the Non-naturals, p. 319. Also, *Bonetus* Sepulcret anatom. Vol. II.

[§] Willich's Lectures on Diet and Regimen, p. 520.

Urine, on the one hand, should neither be too long retained, which may occasion inflammation, or a deposition of sediment, and thus lay the foundation of calculus or stone; nor should it be too often evacuated; for thus the bladder becomes narrowed, thickened, and contracted, and loses in some degree its conical and natural size and shape*.

But urine may be in too great, as well as too small a quantity. This may be occasioned by drinking large quantities of weak watery liquors, by the excessive use of alkaline salts, or any thing that stimulates the kidneys, dilutes the blood, &c †.

Turbid water, with sediment like brick-dust, ought not to occasion any alarm. It proceeds from the critical discharge of what was preternaturally retained in the habit ‡.

Connected with discussions regarding urine, is the *calculus urinæ*, or that disposition, either in the blood, or in the urine, to form stony concretions. Innumerable are the works in which that subject has been discussed; but as it belongs more properly to medicine than to diet, it is not proposed to dwell on it in this place §. The use of soda water

---

* Turnbull's Medical Works, p. 143. When the urine is too long retained, it is sometimes *resorbed*, or taken up again into the mass of fluids; and what remains stagnant in the bladder, becomes thicker, the more watery parts fly off, and the more gross and earthy particles remaining behind. By the constant tendency which these have to concrete, the formation of stones and gravel in the bladder is promoted. Hence it comes to pass, that indolent and sedentary people are much more liable to these diseases than persons of a more active life. Buchan's Domestic Medicine, p. 119.

† Buchan's Domestic Medicine, p. 120.

‡ Cheyne's Essay on Health and Long Life, p. 140. The author has often found his urine in London, of the sort above described; probably owing to defective perspiration.

§ Sir William Temple recommends *alehoof*, or ground ivy, as a specific remedy, water is certainly of service, but is apt to promote a relaxation in the bowels. Lime water, soap leys, and some descriptions of mineral waters, have also been found useful in these complaints *.

Of late, a disease has become extremely prevalent, of a nature more horrible than even the stone itself; it is a stricture in the urethra, by which the evacuation of urine is prevented. The means of remedying this disease has become a most important branch of surgery; and the tortures which are occasioned by the operations which surgeons are under the necessity of performing, are more dreadful than can well be conceived. This disorder, which fortunately is not known to females, is perhaps the most dreadful malady to which the male sex is exposed; and nothing is more necessary, than early to warn the young and ignorant, of the tortures to which they may subject themselves, by thoughtlessness and indiscretion †.

3.

---

remedy, or prevention for the stone, both on his own experience, for about ten years, and that of others. See his Essay on Health and Long Life. Code of Longevity, Vol. IV. p. 355.

* There are some valuable observations on the subject of the stone, in Heberden's Commentaries on the History and Cure of Diseases, p. 80. In Anderson's Medical Remarks on Natural, Spontaneous, and Artificial Evacuation, there is an account of a stone having been evacuated by the use of Castile soap, and the water of a spring at Coombe-hill, near Hampton-court Palace, the water of which is so pure, that no fur will adhere to the inside of the culinary vessels where that water is constantly used, see p. 97. It may be proper to add, that where there is a difficulty in making urine, owing to a palsy in the parts, it has often been got the better of by electricity. The application also, of hot water, has been found of service. See Smith's Curiosities of Common Water, p. 49. See, also, Swan's Sydenham, p. 586. where there is an excellent dissertation concerning bloody urine from a stone in the kidneys.

† This subject is very properly touched upon in the Manual of Health, Appendix, No 3. p. 396. under the title of 'Articles qui n'est pas fait pour les Dames.' It concludes with the following judicious observation. —'If

3. PERSPIRATION.

Perspiration is the last act of perfect animal digestion * ; and of all the natural evacuations, none is so important, or so extensive ; none is carried on with less interruption ; and none frees the body from so many impurities, particularly from those thin and acrid humours which are so noxious to the human frame. Perspiration is also of use, for the purpose of moistening the external surface of the body, and preventing the skin from being dried up by the atmospheric air ; and also, for remedying any defect of transpiration from the lungs, as in that case the perspiration of the skin is increased. On account of the importance of this function, on which indeed the health of man so much depends, it is proposed to discuss the subject, at some length, under the following general heads : 1. The nature of perspiration in general. 2. The divisions thereof. 3. The quantity that ought to be perspired. 4. The circumstances which promote perspiration. 5. Those which obstruct it. 6. Proportion of perspiration to the other discharges ; and, 7. General observations regarding that important function.

1. Perspiration is a subtile and invisible vapour, constantly flying off from the surface of the body, though ever so cautiously protected by clothes, &c. It gives quickly a tincture to whatever is applied to it, which, when examined with the best microscopes, appears to be composed of

---

—' If there existed a society for the circulation of tracts, to promote prudence among young men, a few of these histories, related without the least exaggeration, must, one would hope, have a good effect, by teaching them how much they will have to suffer from disease, and how much more from the surgeon.'

* Arbuthnot on Air, p. 167. Lynch on Health, p. 142.

the several constituent parts of the solids and fluids, which constantly exhale and perish *.

For the discovery of the nature, importance, and extent of perspiration, or what may be called the *static* system of medicine, we are indebted to the celebrated physician Sanctorius, who established, by the labour of 30 years, the existence of this discharge, beyond the possibility of doubt; and whose doctrines have since been sanctioned by the experiments, and supported by the authority, of many able men.

2. Perspiration is divided into two sorts, the one called *sensible perspiration*, because it is rendered visible to the eye; the other *insensible*, which is discharged in the shape of vapour. It has, however, been collected by various means, and subjected to chemical experiment.

When the perspirable matter collects in drops, it is known under the name of *sweat*. This substance appears on the surface of the body, after violent exercise, more especially in hot weather. In excess, it is extremely weakening, as it carries off with it many of the most nutritious particles of the blood; but it is sometimes of use, by supplying a watery excretion, when the urine is deficient, and by expelling, in disease, the morbid matter by which the body has been disordered. In fevers also, the heat in the blood may thus be diminished. If it is rendered, however, habitual, as in the case of night-sweats, it is apt to lay the foundation of consumption, and other disorders of a most serious nature.

Transpiration, however, or insensible perspiration, is perfectly invisible, and passes off in small quantities at a time; but chemists have ascertained, that, among the substances perspired, water, carbon, an oily matter, and an acid, are certainly constituent principles [*].

---

* Barry on Digestion, p. 2.; also, Lewenhoeck, Tom. IV. Epist. 43.

The nature of this discharge, is thus elegantly described by the Poet of Health.

> For thro' the small arterial mouths that pierce
> In endless millions the close-woven skin,
> The baser fluids, in a constant stream
> Escape, and viewless melt into the winds.
> While this eternal, this most copious waste
> Maintains its wonted measure, all the powers
> Of health befriend you, all the wheels of life
> With ease and pleasure move: but this restrain'd,
> Or more or less, so more or less you feel
> The functions labour; from this fatal source
> What woes descend, is never to be sung [†].

3. The quantity of this discharge is very great, as it is constantly going on, day and night, through innumerable pores, every where spread over the surface of the skin, 3000 of which, according to some computations, occupy no more space than one inch, though, according to others, the pores are infinitely more minute. Indeed, some have gone so far as to say, that 125,000 perspirable vessels may be covered with a grain of sand [‡].

If a strong healthy man, who uses moderate exercise, eats and drinks to the amount of eight pounds weight in a day, he will discharge, in good weather, five of them by insensible perspiration; and he will be more relieved, by a free insensible perspiration to that extent, than by all the sensible evacuations united [§].

It

---

[*] Thomson's System of Chemistry, Vol. IV. p. 732.

[†] Armstrong's Art of Preserving Health, Book III. line 256.

[‡] Adair's Medical Cautions, p. 174. and 180. The calculations are by Lewenhoeck.

[§] Mackenzie's History of Health, p. 265.

It has not yet been determined, what quantity of perspiration is necessary for the maintenance of health. *Sanctorius* says, that if the meat and drink of one day, amounts to eight pounds, the insensible perspiration usually arises to about five pounds, the urine to about thirty-two ounces, and stools to about four ounces; but that calculation was made for the climate of Italy. A firm belief that this doctrine of *Sanctorius'* was applicable to other countries, besides Italy, has been prejudicial to many, making them afraid of rising in the morning, if they found any moisture on their skin, least they should check perspiration; but by this erroneous system, they relaxed and weakened their constitutions *.

Later experiments have ascertained, that in England, Ireland, and even South Carolina, the urine, in the course of a whole year, will exceed the perspiration. This may be attributed, however, to various extraneous circumstances; for instance, in Carolina, where that certainly appeared to be the case, it was found to be owing to the quantity, and above all, to the diuretic quality, of the drink, namely, weak punch, which made it pass off quickly by urine †.

But, in general, it may be stated, that a person of middle stature, and in perfect health, will perspire from three to four, and even five pounds weight, according to circumstances, within the space of twenty-four hours.

4. Perspiration is promoted by various ways, as, 1. By the food we eat, some substances being lighter, and more

---

* Robinson's Dissertation on the Food and Discharges of Human Bodies, pref. p. 4.

† Valangin's Treatise on Diet, p. 182.

‡ Robinson's Dissertation on the Food and Discharges of Human Bodies, p. 87.

perspirable than others, and, consequently, easier converted into that subtile vapour, which is discharged by the skin. It is generally believed that the food, the weight of which is not felt in the stomach, perspires most freely. 2. Fermented liquors, by agitating the blood, and promoting circulation, and by strengthening even the solid parts, are supposed to aid and augment perspiration *. 3. Moderate bodily exercise, walking, in particular, is favourable to this function. 4. Stretching and expanding the limbs, so as to quicken the circulation of the blood, must be of service. 5. Perspiration is promoted by proper clothing, adapted to the season of the year, and by a regular change of the linen worn next to the person, which, owing to the quantity of matter perspired, ought to be changed once a-day. 6. Perspiration is much promoted by attention to the skin, keeping it clean and moist. 7. Bathing in warm water evidently tends to promote perspiration. 8. When necessary, warm liquids, and sudorific remedies, are often necessary to promote perspiration in disease. Lastly, The emotions and passions of an exhilarating nature, tend to promote and increase it.

This discharge is certainly of peculiar importance, because it can better supply the defect of other evacuations, than any other can supply the defect of this. It is not improbable, however, that many people increase perspiration, beyond what is necessary, by being over-careful to defend themselves from the injuries of the air. Do we not see, even in the coldest climates, people go almost naked, without any injury to their health, and by that means hardening their bodies, like their hands and faces, which they ex-

pose

---

* Le Medicin des Hommes, p. 121.

pose to every severe cold*? Increasing perspiration, beyond what is necessary, weakens the body, brings on an entire sinking of the spirits, debility, and death†.

5. Obstructed perspiration, on the other hand, dries up the skin, injures the smaller vessels, augments the bulk of humours, occasions a heaviness perceivable by the senses, and an increased weight of the body, and is certainly one of the principal sources of disease; indeed, few disorders attack us when that function goes properly on. This discharge, however, being less perceptible than any of the rest, though the most important, as the matter exuded is of an acrid and irritating nature, it is consequently less attended to, hence it is, that colds, fevers, rheumatisms, agues, &c. often proceed from obstructed perspiration, before we are aware that it has taken place. It is proper, therefore, to consider, what are the causes of those obstructions, and what are the means of preventing them.

Obstructed perspiration, in general, arises from the following circumstances: 1. From moist and cold air. Where the air is pure and healthy, even though it is cold, and the perspiration thereby obstructed, yet the fibres are strengthened, and the matter retained is neither dangerous nor painful; whereas in a cold and moist air, the perspiration is stopt; the fibres relaxed, but not strengthened; and the matter retained is both bad and unwholesome. 2. From improper food; for too many oleaginous, viscous, and crude articles of nourishment, such as fat meat, pastry, boiled mealy dishes, smoked hams, sausages, &c. have a strong tendency to obstruct the free perspiration of the body *. 3. From violent pain. 4. From obstructions of the cutaneous vessels, frequently occasioned by the use of salves, ointments, and cosmetics. 5. From severe colds, particularly those contracted at night, and during sleep. 6. From nature being employed with other objects; and in particular, from the mind being engaged in concerns of an interesting nature, which excite strong emotions. 7. From neglect of exercise. 8. From want of cleanliness. 9. From improper clothing, as wearing too tight garments, and improper ligatures about the joints †. 10. From changes in the atmosphere, which happen so frequently in Great Britain. This can only be guarded against by being as much as possible abroad, and exposed to the open air; for it is a just observation, that those who keep most within doors, are most liable to catch cold. The open carriages, which have of late become so fashionable, are greatly to be approven of on that account. 11. From wet clothes, a well-known cause, and which therefore need not be dwelt upon. None but the most hardy can bear neglect in this respect. 12. From wet feet. This has proved the source of many fatal disorders. The application of spirits, after the feet are dried, restores speedily the circulation ‡. 13. From night air. The coolness of the air, and the dews which then fall, are highly unfavourable to perspiration, but less so in towns than in the country. 14. From damp

---

* Valangin's Treatise on Diet, p. 183.

† Too great a waste of perspirable matter, also weakens the fibres, by leaving them with too small a share of moisture; and the fresh indigested humours pressing forward into the small vessels of the skin, occasion cutaneous eruptions. Burton on the Non-naturals, p. 328.

---

* Willich's Lectures on Diet and Regimen, p. 528.

† Ibid. p. 525.

‡ Some recommend bathing the feet, for a few minutes, in tepid water, as a much safer application.

damp beds. It is infinite the mischiefs which they have occasioned, and the number of deaths which have been the consequence thereof. In inns this often happens, and ought to be punished by law; and even in private families, the beds for strangers are not always so free from damp as they ought to be. 15. Damp linen. Even where the beds are dry, little attention is paid to the linen. This is particularly the case at inns; and travellers, who are often very anxious about what they eat and drink at inns, pay no regard to a circumstance of much more importance. When there is any apprehension of damp linen, or of a damp bed, the best precaution is, to sleep in the blankets. 16. Damp houses. This often happens from their being improperly situated, from being built of sea-stone, or from being inhabited too early. 17. Damp rooms. An attention to cleanliness has often occasioned the washing of rooms at a very unseasonable period, so as to be inhabited before they were perfectly dry, 18. Sudden transitions from heat to cold *. Frequent colds are caught in summer, by going from the burning rays of the sun to the cooling shade; and the first cold of autumn is more sensibly felt, because we are then unaccustomed to that impression. For instance, changing suddenly the air of a warm room, for that of a cold atmosphere, or, when a room is hot, throwing open a window, and sitting near it, or when warm, plunging into cold water, or drinking freely of cold water when hot, which sometimes has occasioned immediate death, and often a variety of other disorders †. Lastly,

---

* Sanctorius advises us, very carefully to avoid the deceitful pleasure of suddenly cooling the body, when heated by air or exercise.

† See these subjects more fully explained in Buchan's Domestic Medicine, p. 120.

Lastly, Restless nights, fasting, or an increase of the other evacuations, obstruct perspiration *.

6. In order to explain the superior importance of this discharge, it may be proper to give the following abstract of a very curious statical table, drawn up by Doctor Robinson, of the experiments he tried for eight months, commencing in April and ending in November, in the forty-second year of his age, which ascertains the medium proportion of the three discharges, in so far as his experience goes.

	Ozs.	Ounces.
Mean quantity of food per day - - - -		86.31
Mean quantity of stool - - -	5.54	
Mean quantity of urine - - -	34.91	
	40.45	
Mean quantity of perspiration - -	45.86	86.31

Thus, it would appear, that, in the course of these experiments, a greater proportion of liquid and solid food was discharged by the skin, than by stool and urine; the result, however, of Dr Robinson's inquiry is, that there is but one weight under which a grown body can enjoy the best and most uninterrupted health, namely, when the perspiration and the urine are nearly equal at all seasons of the year; for, by this means, the body will be uniformly drained of its moisture, the inward parts by urine, and the more superficial parts by perspiration, without any irregular and unnatural discharges. The morning weight of the body also will then continue nearly the same at all seasons of the year †.

---

* Fothergill's Rules for Preservation of Health, p. 87.

† Robinson's Dissertation on the Food and Discharges of the Human Body, p. 91.

Sanctorius has proved, that robust persons discharge the remains of their nutriment chiefly by perspiration, the weak chiefly by the kidneys or bowels; but in a state of great weakness, it passes off in the shape of undigested chyle *.

7. We shall conclude with some general observations regarding this important subject.

Some contend, that too much stress is laid upon perspiration, for it is so very variable, and is so liable to be checked by many different accidents, that if life depended upon its being equal, we should not enjoy health for a single day. Besides, some stop up their pores by greasy unctions, and do not seem to suffer from it. It is not clear, however, that perspiration is much checked by this practice, or the defect may be compensated by other evacuations, or by an increased perspiration from the lungs †.

The importance of perspiration, however, may be judged of from our own feelings. Irregularities, in this respect, produce peevishness of temper, head-achs, disturbed sleep, heaviness in the limbs, &c.; whereas we never find ourselves more lively and vigorous, nor are our health and spirits in a better state, than when that function is duly performed ‡.

The importance of perspiration, when combined with peculiar clothing, is exemplified by the following singular circumstances: many Asiatic nations are induced to wear turbans to prevent the *coup de soleil;* and hence their skulls, from the perspiration which that occasions in the head, are remarkably thin; but they leave their necks bare, which are consequently remarkably thick and muscular. Many European nations, on the other hand, owing to the coldness of their climate, are led to keep their necks warm, but their heads are not so heavily covered as with a turban, nor are hats worn in the house; hence their skulls are thicker, and their necks more taper *.

---

* Adair's Medical Cautions, p. 180.

† Adair's Natural History of the Human Body and Mind, p. 186.

‡ Willich's Lectures on Diet and Regimen, p. 522.

It has been observed, that one perspires less when the stomach is void; hence those who eat twice or thrice a-day perspire better than those who eat but once.

There is no better mode of preserving an equal perspiration, than to accustom ourselves, from early youth, to the vicissitudes of heat and cold. This may be effected by walking every day in the open air, and washing the body with tepid, or, still better, with cold water, which braces the pores, and enables us to undergo the different changes of the weather and of the seasons.

It is to be observed, that if we retire to bed immediately after supper, the process of perspiration is checked in a remarkable degree; we ought therefore to sit up at least two hours after supper. To obtain the full benefit of this practice, both to the organs of digestion and perspiration, our supper ought not to be delayed to the late hours now in fashion †.

The exudation by the pores is most essential during the night, when the sleep is sound and refreshing; for the noxious particles alone are then expelled. This cannot be effected in the day-time, on account of the disturbances to which we are exposed, which interrupt the circulation of the blood, whereas at night it is comparatively more calm and regular. The nocturnal perspiration also is more copious,

---

* See Code of Longevity, Vol. III. p. 313 and 318, as to the effect of wearing hats or turbans.

† Willich's Lectures on Diet and Regimen, p. 524.

pious, from the greater uniformity of the surrounding atmosphere, and from the more regular warmth to which the body is then subjected. Nocturnal perspiration, therefore, is esteemed more beneficial than what is produced from labour or exercise when we are awake, the discharge being more gross and crude, and probably carrying off with it some of the finer nutritious juices.

It is extremely unwholesome, however, to lie in bed too long, as that weakens the fibres, and promotes too abundant a perspiration; and sleeping on feather-beds also, ought to be avoided, as it occasions a constant *vapour-bath* at night, which destroys the beneficial acquisitions of the day.

The young perspire a great deal more than the old. It would appear, that the texture of the skin, as life advances, becomes closer and more shrivelled, and less able to expel any substance through its pores. It is on this account, that old people have such a quantity of defluxion, which they evacuate by the mouth *. That defluxion always abounds most in the winter season, when perspiration diminishes.

To encourage perspiration, and to prevent an injurious load of defluxion, old people ought to keep themselves warm, to drink a little wine, to use moderate exercise, and to change their linen often. Warm bathing also, is of use to the aged, from its tendency to promote perspiration, but it ought only to take place when their stomachs are empty. It is said, that old people, after bathing, should not have their skins rubbed with coarse flannel, or linen cloth.—That may be of use to young people, whose pores are naturally too open; but is prejudicial to old people, whose pores are naturally contracted. Where the perspiration continues deficient, old people ought to take decoctions in order to promote it*.

---

* Le Medicin des Hommes, p. 119.; also, Experiences de M. De Sault sur la transpiration.

GENERAL RESULT.

The food we take, is at first divided into two parts. 1. The earthy and grosser particles, which are discharged by stool; and, 2. particles which are absorbed, and added to the mass of circulating fluids. The latter part is applied, 1. To the purposes of nutrition; or, 2. Discharged by urine; or, 3. By perspiration. By these processes the body, after having consumed several pounds of solid, and of liquid food, returns every morning to nearly its original weight.

The means by which this daily miracle is effected, I have endeavoured, in the preceding pages, shortly to elucidate.

SECT. V.

Means of remedying Indigestion.

As the health and nourishment of the body entirely depends upon the proper and regular digestion of the food it consumes, there is no subject that can be of more importance, with a view to health, than to consider the means of remedying any deficiency or error in regard to this important function.

Indigestion may either be temporary, or settled; and the remedies must vary accordingly.

Temporary indigestion may be owing to various causes, as, the eating of too great a quantity of food; in which case, the bad effects of it may be prevented by abstinence, and not filling the stomach again, until it has got rid of its former contents. It may also be owing to the bad quality of the food; in which case, the noxious matter must be got rid of, sometimes by abstinence also, but generally by compelling a discharge, either by a vomit or a purge.

---

* The Nurse's Guide, by an eminent physician, p. 121.

A settled indigestion may arise from some irregularity in the habit, a subject that has been already dwelt upon; or from two causes, which remain to be discussed; 1. Some weakness or disease in the stomach itself; or, 2. A deficiency or error in some of the secretions above described, as the bile, the gastric juice, &c.

1. Various modes have been thought of for strengthening the stomach. By pure air and moderate exercise alone, that may often be accomplished. Many, however, have recommended various medicines for that purpose, some account of which it may be proper to mention, without being implicated for any responsibility in regard to their success.

In Sweden, the elixir of Doctor Jernitz has been much celebrated; and, as a proof of its efficacy, it is said that the doctor himself attained the age of 104, his son to 100, and the whole of his family, by the constant use of it, lived to a great age. Numbers also in that country are said to have received great benefit from it *.

An

---

* The following is the receipt for making this elixir, which was given me by a friend. It has been tried in England, and found serviceable to the stomach; and, by strengthening that important organ, it is said also to render persons less liable to catch cold.

RECEIPT FOR MAKING THE ELIXIR OF LONGEVITY.

One ounce and one dram of sugar of aloes, one dram of zedoaria, one ditto of gentiana, one ditto of saffron, from the Levant, one ditto of fine rhubarb, one ditto of theriaque of Venice.

Reduce the five first mentioned drugs to powder, and let them pass through a sieve; afterwards put them into a bottle, with the theriaque, and throw into it a pint of good brandy; stop the mouth of the bottle well

An intelligent French author (D'Aubenton) has written a short tract on the subject of indigestion. He observes, in that work, that the human body has its periods of growth, of full vigour, and of decay; and that the exercise of all its functions depend, not only on the daily state of the body, but also on its periods, as connected with all the different ages of life. Digestion, in particular, follows the general law; its agents are weak in infancy, but they grow stronger

from

---

well with wet parchment, and when it dries, prick several little pin-holes in it, and put it in a press for nine days, taking care to stir it well. On the tenth day, without moving the bottle, let the infusion run out gently into another bottle, as long as the liquor continues clear. The bottle containing this infusion, must be well stopped with linen. Afterwards, pour a second pint of brandy upon your drugs, for a second infusion, which you will leave other nine days in the bottle, well stopped like the former, and stirred well in the same manner; you must pour it, on the tenth day, into another bottle; and when you perceive that the liquor is no longer clear, put cotton into the funnel, and filtrate it several times, if necessary, *to have it quite clear.* Do not forget to put a piece of linen over the funnel, that the spirit or liquor may not evaporate. The two infusions should be mixed together, in a well stopped bottle, and you may make use of it immediately.

By the daily use of this remedy, one may live for a very long time, without requiring bleeding, or any other medicine or preservative against contagious diseases; the small-pox it throws out without any danger; and it has this admirable property, that one may safely take a very strong dose of it; and it is also serviceable in less doses, according to circumstances. For sickness at the stomach, one spoonful, *quite pure;* for indigestions, two spoonfuls in four of tea; for drunkenness, two spoonfuls, quite pure; for colics, two spoonfuls in four of brandy; for fits of the gout, during the fit, and particularly when it is getting up, three spoonfuls, quite pure; for worms, one spoonful before eating, for eight days; for the dropsy, one spoonful in white wine, for a month; for intermitting fevers, a spoonful, quite pure, before the cold fit; and, if the fever is not cured by the first or second dose, it will undoubtedly be so by the third. The only precaution necessary, while taking this elixir, is, to eat nothing raw, to take neither milk nor salad, and not to go too much into the open air. The quantity to be taken daily, is seven drops for women, and nine for men. Very old people should take, besides, a spoonful quite pure, every eighth day.

from day to day: they acquire all their strength in youth, they subsist in a virile age, they begin to diminish in the age of decline, they grow much weaker in old age, and they are almost extinguished in decrepitude. It is at the commencement of decline, which, according to circumstances, varies from the fortieth to the forty-fifth, and even to the fiftieth year of the age of each individual, that the stomach begins to require peculiar care and precaution. People who have been subject to indigestions before, have them then more frequent and more violent; and those who almost never experienced them before, except on some very extraordinary occasions, begin to feel them, even from slight causes. Sedentary people are particularly subjected to these complaints.

The remedy proposed by M. D'Aubenton is, ipecacuanha in powder; the dose depending upon the quantity that will not excite any painful symptom of nausea, but sufficient to excite a light sensation of the vermicular movement of the stomach, by which the phlegm may be separated and expelled from that organ. There are some people who can take to the amount of two grains without nausea, and others who cannot take more than a third or a fourth part of a grain. It is proper to begin with a small dose, and to augment it gradually, if it is necessary, until the point in which the action of the remedy begins to be felt.

The ipecacuanha which he recommends to be taken, is the brown sort, commonly used in medicine. The most favourable time for taking it, is in the morning, fasting, or an hour or two before breakfast. The powder may be put in a spoonful of water or wine, or taken in the pulp of a roasted apple, or in sweetmeats or lozenges.

The object of this remedy is, to clear off the phlegm or slimy matter which disturbs the action of the stomach. The secretion of the digestive liquor, or the gastric juice, is thus promoted, and the source of indigestion is removed.

D'Aubenton adds, that he had proved the effects of it, and that the remedy had surpassed his most sanguine hopes; indeed, he is said to have prolonged his own life, notwithstanding a naturally delicate constitution, to the age of 84, by the use of this medicine; and he recommended it to many people, with whom it had the same success *.

It is well known that the French, in general, pay particular attention to the state of their stomach, not only on account of its importance in a view to health, but also as a means of greater enjoyment, by the pleasures which the table affords. I was therefore extremely desirous to ascertain what system was accounted the most beneficial, by the luxurious inhabitants of Paris, for preventing indigestions, and the following is the result of that inquiry.

The first rule is, for each individual to study well the nature of his stomach, which may be very strong in some respects, and very weak in others; for, so capricious is this organ, that it can digest, with ease, ten times more of one food than of another. In general, indeed, it is not so much the quantity, as the quality of the food, and the manner in which it is dressed, which occasions indigestion. It is, therefore, asserted, by the most experienced *gourmand* of modern times, (M. Grimod de la Reynier), that if you

---

* See Memoir sur les Indigestions, que commencent à etre plus frequentes, pour la plupart des hommes à l'âge de 40 ou 45 ans. Lu à la Societe Royale de Medicine, le 26 Oct. 1784, par M. D'Aubenton. An eminent physician has given the following formula for ipecacuanha pills for stomachic purposes.

℞ Pulv. Ipecacuan. ℈ j.
—— Rhubarb ℈ ij.
Syrup. q. s. f. Pill. N. xx.
Cap^{t}. j hora somni quotidie.

masticate well, and for a long time; if you will divide thoroughly, with the assistance of stale bread, every sort of food, particularly the more compact; if you will never swallow but small morsels of meat at a time, and only mouthfuls of liquor; and if you will add, *le coup d'àpres*, *le coup du milieu*, *le café*, *et les liqueurs*, you will seldom find yourself incommoded, even by the longest and heaviest dinner *.

This doctrine must, doubtless, be more acceptable than the ipecacuhana powders of M. D'Aubenton; and it is certain that the French, by following these rules, and rarely dressing their meat, until it is rather tainted, are much seldomer troubled with indigestions than the English, though, in general, they eat much greater quantities, both of animal and of vegetable food. They retain also their health, their vivacity, and their good humour, till a very advanced period of life.

During the night, bile, phlegm, and other noxious matters, must increase more in the stomach, than in the day-time, not being purified by fresh air, nor expelled by exercise. In order to wash out the noxious matter thus accumulated, it has been proposed to take a large tumbler of hot or of cold water, every morning, when the stomach is empty †. A person who had been accustomed to drink Tunbridge water for that purpose, from the use of which he had derived much benefit, being prevented from going one season, drank the same quantity of water, taken from the pump of a spring in his own yard, which did him as much service, on which he wrote these lines upon his pump;

---

* Almanac des Gourmands, seconde année, p. 286. The *coup d'àpres* is a glass of generous wine, after broth or soup. The *coup du milieu*, is a glass of rum, or other spirits, in the middle of your dinner.

† It is said, that the drinking repeated doses of hot water, for indigestion, and pains in the stomach, has injured many stomachs, is merely a palliative, and highly debilitating.

Steel is a cheat;
'Tis water does the feat *.

At the same time, the mineral particles, and the fixed air, with which mineral waters generally abound, enables the stomach, to drink greater quantities of them, than otherwise it could bear.

Elixir of vitriol is accounted an excellent medicine in most cases of indigestion, weakness of the stomach, or want of appetite. From twenty to thirty drops of it may be taken twice or thrice a day, in a glass of wine, or of water. It may likewise be mixed with the tincture of the bark, one drachm of the former, to an ounce of the latter, and two tea-spoonfuls of it taken in wine and water, as above directed. It must not, however, be too frequently repeated.

Chalybeate waters, if drank in moderation, are generally of considerable service in removing indigestion; and persons who are afflicted, either with indigestion or want of appetite, cannot do better than to repair to Cheltenham, Harrogate, Scarborough, Moffat, Peterhead, and other places of public rendezvous. The very change of air, and the cheerful company to be found there, will be of service; not to mention the exercise, dissipation, amusements, &c †.

Preparations of iron have also been found of great service in stomachic complaints. And Doctor Beddoes states, that the red sulphate of iron, deserves the preference above all other preparations of that sort, and indeed above tonics in general, as a remedy for simple indigestion. This medicine,

---

* Smith's Curiosities of Common Water, p. 32.

† Buchan's Domestic Medicine, p. 392.

dicine, he adds, almost infallibly cures, in the dose of a few drops *.

For stomachic and nervous complaints, a tea-cupful of chamomile tea every morning, or every other morning, has been recommended to strengthen the stomach †. It should be a cold infusion, and the flowers carefully dried in the sun, and not on copperplates. When occasionally taken, this may be of use. But bitters of all kinds seem to possess a narcotic power; and when taken for a considerable space of time, they destroy the sensibility of the stomach. This is a class of medicines, therefore, that requires much caution, when dyspeptic complaints, arising from weak digestion, are to be treated. A celebrated medicine for the gout, was offered some years ago to the public, under the name of the *Portland powder*. It was composed chiefly of bitters; and though it was known to alleviate, and even to cure the gout, it was always at the expence of the constitution ‡.

Bitters, however, in moderation, may be safely taken, at least that has been found to be the case in France. It it certain, that stomachic complaints, and nervous disorders, are not so common at Paris as in London, where the use of spiritous liquors, and of hot tea, infallibly injure the stomach and the nerves. The wholesome wines, the coolness of the regimen, and the care so strongly recommended by the medical profession in France, to keep the bowels in a tranquil state, also tend to obviate these complaints. But when they do occur, the products of the orange-tree are regarded as the chief specifics. The ladies carefully collect the leaves of the tree, of which they make an infusion; candied orange-peel likewise, is regarded as a *calmant*, or medicine fitted to tranquillize the system; and the spirit distilled from the flowers, as the only liquor which calms and smoothes, instead of agitating the nerves. White wine is forbidden in such cases; but red wine, which is esteemed a corroborant, is allowed [*].

---

* Beddoes' Hygëia, Vol. II. p. 75.

† It is said that chamomile tea, if allowed to stand any time, becomes deleterious.

‡ Trotter's Essay on Drunkenness, p. 101.

Flatulency, or the production of air in the intestines, is one of the most troublesome circumstances connected with indigestion; but is hardly ever inconvenient to those who avoid sugar, wine, bread, and every thing of vegetable origin, and adhere as strictly as possible to an animal diet [†]. Any inconvenience of this sort might be prevented by such a quantity of carbonated alkali, as, on experience, shall be found adequate to the effect [‡].

In cases where the stomach has been oppressed by phlegm, an infusion of horse-radish has been found a powerful alterative; and, as such, was strongly recommended by an ancient physician [§]. Indeed, some have recommended moderate draughts of a strong infusion of horse-radish in hot water, after vomiting, instead of chamomile-tea. The infusion is said powerfully to attenuate, and to disengage

---

[*] Pinkerton's Recollections of Paris, Vol. I. p. 299. In nervous and hypochondriac diseases, so common in Britain, and which the French would often treat as mere indigestions, the use of heating medicines will generally increase the malady, while the blood and nerves should be tranquillized and refreshed by a cooling regimen. Pinkerton's Recollections of Paris, Vol. II. p. 393.

[†] Beddoes' Hygëia, Vol. II. p. 57.

[‡] Ib. p. 106.

[§] See a letter written by *Diocles Carystius*, to Antigonus, one of Alexander's successors, in Paul. Æginet. ad finem. This is one of the most curious remnants of antiquity. In it, Diocles furnishes that monarch with an excellent regimen for preserving his health, in the different seasons of the year; and marks out such symptoms as usually precede approaching disorders, and in what manner they may be most effectually prevented.

gage the phlegm, and to warm and strengthen the stomach. Many persons have been surprised, after discharging a load of phlegm by this infusion, to find it soon after dissolved into water, with very little appearance of phlegm remaining. This must be owing to the uncommon activity of its volatile salts *.

In stomachic, and other complaints, the virtues of rue and of saffron, have been much celebrated by Sir William Temple; but they ought to be taken in moderation. He recommends rue as of excellent use, in all those illnesses of the stomach, which proceed from cold or moist humours, and as a great digester and restorer of appetite; it is also said to dispel wind, and to promote perspiration. But saffron he extols, as, of all others, the safest and most simple cordial, and the greatest reviver of the heart, and chearer of the spirits, insomuch that it cannot be of too common use in diet, any more than in medicine. The spirit of saffron, he says, is, of all others, the noblest and most innocent, and yet of the greatest virtue. He has known it restore a man out of the very agonies of death, when left by all physicians, as wholly desperate. But the use of this, and all other spirits, ought to be employed only in very urgent cases, lest it should extinguish the natural heat of the stomach †.

It is proper to observe, that there is no better mode of preserving the stomach in good order, than to keep the feet perfectly clean, washing them daily, or at least very frequently, in tepid, and afterwards, if possible, in cold water.

---

* Barry on Digestion, p. 48.

† See Sir William Temple's Essay of Health and Long Life. Code of Longevity, Vol. IV. p. 354.

Heat, also, is of great consequence in promoting digestion; for it has been observed, that the act of digestion has been very much facilitated, and performed in a shorter time, if, after a meal, particularly when a person remains sedentary, an additional coat be put on *.

As indigestion is much more usual with persons advanced in life, than with the young, there is every reason to suppose, that it is greatly owing to chagrin and anxiety; for experience proves, that the cares of life fall heavy upon the digestive organs; and the consequences thereof must be felt with double force, when, in addition to mental anxiety, improper foods are made use of †. When the mind is in any way affected, the food cannot be of too light a nature, nor can any thing be more absurd, than luxurious gratifications in eating, at such a time, though some glasses of exhilarating wine may not be unadvisable.

I cannot conclude the subject of indigestion better, than by giving an account, transmitted to me by an intelligent friend, of his own case, and the means he successfully adopted for removing that complaint.

In the early part of his life, he observes, that he had studied physic, and that he had continued, after he had relinquished all idea of the medical profession, to pay particular attention to the subjects of health and longevity.—About the age of twenty-eight, he fell into a state of great debility, in which life became a burden to him, and which his friends attributed to a sedentary mode of life, and the contaminated air of London, after having long breathed the fresh western gales from the Irish sea. Having tried in vain the prescriptions of very eminent physicians, and taken

---

* Code of Longevity, Vol. II. App. p. 15.

† See Manual of Health, p. 308.

en quantities of bark and steel, in various preparations, he resolved at last seriously to examine into the nature of his complaint, and found that it was a clear and decided case of *dyspepsia*, or debility in the organs of digestion. The object then was, to adopt such a regimen as would restore the tone of the stomach. He had tried what is called a light and low regimen, and it had not succeeded; he was convinced, therefore, that solid animal food, not in too large quantities, would be found the most digestible, and that the use of bitter fluids, *in moderation*, would help to give tone to the stomach. He could not take flesh for breakfast, and was therefore obliged to have recourse to wheaten bread, though he is now satisfied, that oaten bread would have answered as well, or rather, that a mess of good boiled oatmeal and water, of the consistence such as is eaten by the peasantry of Scotland and Ireland, would have been still better. For common tea, he substituted tea made from orange peel, a little sweetened, to make it palatable, and diluted with milk. Dinner and supper, his only other meals, were confined exclusively to animal food, either boiled or roasted, quite plain, with a little potato, to which vegetable he restricted himself for twelve months. His principal difficulty was, in regard to drink. Wine of any kind, and port in particular, turned acid upon his stomach, and *there was the great evil**. He therefore used sparingly, a little mild and sound porter as an aperient, and some spirit and water, generally rum or geneva, but in a small quantity, for fear of over stimulating. As soon as he found that the stomach could bear it, which was, he thinks, in about two months, he gladly exchanged the spirits and water, for a little sherry, and as soon as he found that his stomach could bear port wine, he looked upon himself as quite cured, for this fluid never becomes *heavy* according to the vulgar phrase, that is, *turns acid*, but on a weak stomach. He found that fish was more disposed to turn acid than flesh. He has ever since been free from such attacks, which he in part attributes to keeping the intestinal canal regular, or rather open, not by medicine, but by aperient regimen, particularly by a moderate use of fruit, in which he can now with safety indulge, and which he considers to be, in that point of view, one of the greatest blessings bestowed on man.

---

* Acid elixir of vitriol, is said to be a sovereign remedy in cases of this nature.

2. The only remaining point to be considered is, what steps ought to be taken, when indigestion proceeds, not from any weakness in the stomach, but from some deficiency in the gastric and other juices, or in some other branch of the great, and complicated process of digestion. This, however, is the province of the physician, and these are particulars, regarding which, the sentiments of an intelligent medical friend, must be found of the most essential service. In general, however, it is to be observed, that the best means of promoting the secretions of the body, and re-establishing its functions, when impaired, is, by moderate exercise, pure air, and serenity of temper; and that occasionally a change of scene, and an excursion to places where amusement is the great object, and the cares of life are for the moment laid aside, must be productive of the most essential benefits.

I have thus thrown together, some general ideas on the subject of digestion, a point of such infinite importance to the health of every individual, that it cannot be too frequently discussed, nor the doctrines therewith connected, too accurately investigated, too firmly established, or too generally made known.

CHAP. V.

ON EXERCISE.

When we contemplate the structure of the human frame, we must be convinced that it is peculiarly calculated for activity and exertion*. Nothing can exceed the admirable nature of its form, by means of which it is enabled to move from one place to another; and by the flexibility of its joints, to bend itself with ease to cultivate that soil from which its food must be extracted. It is *by labour* (in which general term *exercise* is included), that man, 1. Perserves his health. 2. Augments his strength. 3. Improves his mental faculties. 4. Procures the means of his subsistence; and, 5. Obtains all the other conveniences of life.

---

* 'When I consider the physical structure of man,' said the great *Frederick*, 'it appears to me, as if nature had formed us, rather to be postillions, than sedentary men of letters.' And, without doubt, though this expression be strong, it contains a great deal of truth. Hufeland's Art of prolonging Life, Vol. II. p. 206.

1. In regard to health, none of the various processes described in the preceding chapter, as connected with the important function of digestion, could be properly or adequately performed, unless the body were stimulated, for that purpose, by labour and exertion*. It is by these means that the digestive secretions are prepared; that the alimentary juices are absorbed, and incorporated with the system †; that the blood is duly circulated, and imbibes the wholesome influences of the atomsphere; that warmth, so essential for our health and comfort, is diffused over the whole body, even to its utmost extremities; and that perspiration, so peculiarly salutary for the human frame, is duly promoted.

2. Not only is the healthiness of the frame thus preserved, but it acquires that strength, so essential for enabling it to perform the toils which it must undergo. Hence it is, that those persons who cultivate the ground, are not only the healthiest, but, in general, the strongest individuals in the community. Besides the beneficial effects of exercise on the whole frame, it is also a singular and important circumstance, which well merits to be attended to, that particular parts of the body, as the legs, thighs, and feet of a chairman; the arms and hands of watermen, and of sailors; and the backs and shoulders of porters; in short, all the organs which are much exercised, however weakly before, yet become, in process of time, thick, strong, and brawny;

---

[*] So much convinced was the celebrated Cyrus, that exercise was essential to health, that he established it as a rule among the Persians, to whose education and health he paid such particular attention, 'that they should never eat but after labour.'

[†] The health of all the parts, and the soundness of their structure, depend on perpetual absorption, and perpetual renovation; and exercise, by promoting at once absorption and secretion, promotes life, without hurrying it; renovates all the parts and organs, and preserves them apt and fit for every office.

brawny, and fit to carry through the labour required of them*.

3. The effects of labour, or of exercise, upon the faculties of the mind, are also of the highest importance. An able judge in those matters, has justly observed, that they keep the understanding clear, and the imagination untroubled; and that they refine those spirits which are necessary for the proper exertion of our intellectual powers. It is to a neglect in regard to these essential particulars, that we must ascribe the spleen, which is so frequent in men of studious and sedentary habits, as well as the vapours, to which those of the other sex are so often subject †.

4. Whoever considers, for a moment, the difficulty of procuring subsistence, when a number of human beings are collected within a narrow compass, can hardly question, that the labour of a large proportion of every community, must be employed in raising food for themselves, and the other members thereof; and that, even where the assistance of domesticated animals is made use of, food for them must be provided, during the various seasons of the year, by the exertions of man. In a savage state, when the procuring of subsistence depends on hunting or fishing, the labour is not constant, but is often very severe. The examples however, are rare indeed, where men can provide themselves, at all seasons of the year, with a sufficient quantity of food, unless by means of some laborious employment, as hunting, fishing, gardening, or agriculture. Without exertion, therefore, of one description or another, no great community

---

[*] See Cheyne's Essays on Health, p. 96.

[†] See the Spectator, No. 115, written by Addison. Plin. Sec. Epist. 1. § 6, justly remarks, Mirum, est, ut animus, agitatione motuque corporis, excitatur.

community could be supplied with the means of subsistence.

5. It is by labour, likewise, that all the various conveniences of life must be obtained. Providence furnishes materials, but expects that we should work them up ourselves, by the toil of our hands, and the sweat of our brows. The earth must be laboured, before it gives its increase; but when even that is accomplished, through how many hands must not its products pass, before they are rendered fit for use *! Hence arise the occupations connected with manufactures and commerce, important in themselves, though subservient to those of agriculture, and in which such multitudes of individuals are necessarily and usefully employed †.

But when society is brought to perfection, it is only requisite for a part of the community to labour, in order to provide the whole with the necessaries and the conveniences of life; and the remaining members thereof, may be devoted to occupations of a sedentary or literary nature, where no personal exertion is necessary. The health of every individual, however, placed in such a situation, would materially suffer, and they would soon become more unhealthy, and consequently more miserable, than the rest of mankind, unless they resolved to undergo, that species of *voluntary labour*, which is generally accompanied with some degree of pleasure, as well as toil, and which goes by the name of *EXERCISE.*

---

* See the Spectator, No. 115.

† By labour and exercise also, we secure a sound repose at night, the advantages of which need not be here dwelt upon, as they will be explained in the subsequent chapter. Lord Bacon sums up the benefits arising from exercise, in the following words:—*First*, That it sendeth nourishment into the parts more forcibly. *Secondly*, That it helpeth to excern by sweat, and so maketh the parts assimilate the more perfectly. *Thirdly*. That it maketh the substance of the body more solid and compact; and less apt to be consumed and depredated by the spirits.

In considering this important subject, we shall endeavour briefly to explain, 1. The various sorts of exercise. 2. The advantages thereof, in preventing or curing disease; and, 3. The rules to be observed regarding the same, according to time, place, quantity, age, sickness, and various miscellaneous particulars.

SECT. I.

Of the various Sorts of Exercise.

EXERCISES are usually divided into three sorts, the active, the passive, and the mixed *; but it seems to me, that this important subject, may be treated of in a more satisfactory manner, by dividing exercises into four branches; 1. The youthful. 2. The manly. 3. The gymnastic, and, 4. The healthful and amusing. Under one or other of these general heads, every species of exercise may be included.

1. *Youthful Exercises.*

The great objects of exercise during infancy and youth, are, to promote the growth, to employ the body and the mind, and to render the senses more acute.

Locke justly observes, that all the plays and diversions of children, should be directed towards good and useful habits; otherwise they will introduce bad ones. Whatever they do at so tender an age, leaves some impression; and as they will thence receive a tendency either to good or evil, whatever has such an influence, ought not to be neglected[*].

---

* It is hardly possible to make an arrangement of exercises completely satisfactory. Thus, using a carriage, is called a passive carriage, but driving a phaeton is an active one. Friction is said to be a passive carriage, but many use their own flesh-brush, and render it active.

Nature has implanted in young persons, an earnest desire to romp, to run, to wrestle, and to follow other bodily exercises that require labour, which they will persevere in, more especially the healthier youths, till they are ready to drop down; so that sitting, or being confined, is the greatest punishment they can suffer. This is a wise contrivance of nature; for thereby their joints are rendered strong and pliable.

Exercise is peculiarly necessary for children; much more so than attention to the mental branches of education. Parents will in time discover, that the best mode of cultivating the understanding, is, to secure at the same time robustness of constitution; and they will cease to sacrifice their children's faculties of mind, and strength of body, to the grammatical subtilities of schoolmen and monks[†].

According to Rousseau, the grand secret of education is, to contrive that the exercise of the body, and that of the mind, may always serve as relaxations to each other[‡].

---

[*] Locke's Treatise on Education.

[†] Beddoes's Essay on Consumption, p. 122.

[‡] The following anecdote may be depended upon.—A nurse who was remarkably fond of the child of a gentleman she had the charge of, was heard to say,—'Alas, my dear child, you will soon be taken from me, and *deafed* with education;' implying, that the child would be deprived of the amusements of which it was naturally fond, and would be rendered stupid by study. It is astonishing, indeed, how many perish by what Salzmann calls the disease of education. Multitudes die every year of that disorder. It is an article which ought to make a too conspicuous figure in our bills of mortality.

The exercises of youth, should promote the circulation of the blood, and strengthen the nerves and muscles; they should expose the body to the weather and the elements, and should render it adroit and agile; they should exalt the courage, inspire presence of mind, and excite and cherish activity; and by them, not only personal strength, and mental energy, but also the beauty of the form, should be promoted [*]. The exercises to be recommended, should more especially prevent any of the muscles and limbs from growing into disuse: whence a stiffness of the machine arises, observable in many persons who have not enjoyed proper exercise in their youth. By exercise also, the growth of each limb, and every part of the body, should be made proportionate to the rest. This proportionate growth is, in many respects, highly conducive to health, as well as to symmetry of person, and cannot always be secured without adequate exercise [†].

Having premised these general observations, we shall now proceed to consider the various sorts of youthful exercises, under the following heads: 1. Infantine or childish exercises. 2. Hopping. 3. Jumping. 4. Running. 5. Hooping. 6. Throwing. 7. Lifting and carrying. 8. Balancing. 9. Climbing. 10. Skipping. 11. Sliding. 12. Skating. 13. Swinging. 14. Bell-ringing. 15. Fiving; and, 16. Dancing [‡].

---

[*] Salzmann's Gymnastics for Youth, p. 187.

[†] Ibid. p. 153. This author observes, that, by that forcible respiration which exercise induces, straitness of chest, so injurious to the lungs, may be prevented.

[‡] The greater part of the following observations, regarding the different sorts of exercise, are extracted from Salzmann's Gymnastics for Youth, and Strutt's Account of the Sports and Pastimes of the People of England, printed in one volume quarto, 1801.

1. *Infantine and childish exercises.*—Many of the pastimes and exercises to be mentioned in the following pages, as belonging to youth, and even manhood, are copied by the younger part of the community, and in some degree become the sports of children. Thus, instead of riding, children are mounted on wooden horses, or substitute a stick for a horse, and endeavour to imitate the galloping and prancing of that noble animal. Contending with each other for superiority in running, is another exercise to which children are naturally inclined; and for obtaining the palm in which, they feel as much anxiety, as they afterwards do in regard to higher objects. Marbles seem to be used by boys as a substitute for bowls. There are a variety of exercises, however, peculiar to children, as flying the kite, which is said to be derived from China; and whipping the top, a classical game, which was used in times very remote in Greece; and was well-known at Rome in the days of Virgil. In regard to other infantine pastimes, they are fully described by a modern author, and do not require, in this place, any particular enumeration *.

2. *Hopping.*—Hopping on one leg, though a very simple exercise, ranks amongst the most violent; but it is a very useful one, and serves particularly to strengthen the lower limbs: it ought, however, to be established as a general rule, that after one leg has been exercised, the other must take its turn. Robust experienced boys, will frequently hop above 800 steps, over the most uneven ground. In England, it was not unusual, in the sixteenth century, to have *hopping matches*, and to give prizes to those who distinguished themselves in that species of exercise.

3. *Jumping.*—As this species of exercise, is included among

---

* See Strutt's Sports and Pastimes, Book IV. chap. 4.

among the gymnastic sorts, under the head *Leaping*, it is unnecessary to dwell upon it in this place.

4. *Running*.—Among the means which nature has bestowed on terrestrial animals for the preservation of life, running is the most important; and the body of no animal seems better formed for that exercise than that of man. The nobler parts, which might suffer from an immoderate influx of blood, are uppermost, and the laws of gravitation itself assist in propelling the runner forward. He has nothing to do, but to strengthen his feet and thighs by practice, and to accustom himself to speedy motion; and there is nothing very laborious in the exercise. Perhaps there is no better means of strengthening the lungs of those who are short winded, than by gradually habituating themselves to this exercise. Nothing, therefore, can be more absurd, than to prevent children from acquiring a faculty, innocent in itself, and in many respects so useful. In regard to any risk of consumptions or other disorders from running, it is not the fault of the exercise, but of the person who tries it, without having gradually and properly inured himself to that exertion of his strength *.

Running was formerly considered as an essential part of the education of a young man of rank, more especially if brought up to the military profession †; and it is certainly well calculated for the young and active in general; but, as it is an exercise of much exertion, it ought to be gradually adopted, and not carried to an extreme, when a tendency prevails to complaints of the chest, or there is much fulness of habit *.

---

* Running up and down stairs, is an active and useful exercise; it is recommended by Swift. It is hardly to be credited how healthy it is, and how expert young people become at it by practice.

† There was a game formerly much practised in some parts of England, called *base*, or *bars*, and sometimes *prisoner's bars*, where the success of the pastime depended much upon the agility of the candidates, and their skill in running. Strutt has described this pastime; but it is too complicated to be inserted in this work.—See Strutt, p. 61.

5. *Hooping.*—Driving or trundling a hoop, with a short stick, so as to keep it in motion, without suffering it to fall, is a pleasant incentive to running, and well adapted for spacious level grounds. This is a classical exercise, and was as common with the Greeks and Romans, as it now is in many modern nations. The hoop used by the ancients, was as high as the breast of the person who drove it; and in the inside, rings, or little plates of tin or brass were fastened to make a jingling noise, as is still common in many cases.

6. *Throwing.*—All the different branches of jaculation, are useful exercises for young people; they strengthen the hand, the arm, the shoulder, and the pectoral muscles; and when they are combined with aiming at a mark, it exercises the eye, in forming a judgment of distances, in a very effectual and amusing manner. Slinging, when done for amusement, belongs to this branch of exercise, but has often been included among military arts, as the sling was formerly employed as an instrument of war. The same observation applies to throwing the dart and the javelin. The simplest mode of jaculation, is that of throwing large and smooth stones, at a particular mark, to a given distance; this game is known by the name of *penny-stones* in Scotland, probably from that sum being at first the reward of the victor. The game of quoits is not uncommon in many parts of England; it is played with a circular piece of iron, a little concave on one side, and convex on the

---

* Turnbull's Medical Works, p. 120.

the other, with a large hole in the centre *. The object is, to pitch the quoit in such a manner, that when it falls to the ground, the hole in the centre shall receive a stake, driven into the ground at a distance agreed upon. The *discus*, or quoit of the ancients, as some call it, was made either of metal or stone, and required so much strength, as to be included among the gymnastic arts. There was another exercise of the same sort, formerly much practised in England, namely, *pitching the bar*, which consisted in striving who should pitch a heavy bar of iron, to the greatest distance.

7. *Lifting and carrying.*—These are exercises which require great prudence and caution, if attempted by young people, lest their soft and tender frames may be injured. Lifting a weight with extended arms, fixed on a long staff, with notches at regular intervals, is, however, recommended by Salzmann. He also observes, that young persons, with high shoulders, and short necks, may have those defects in some measure corrected, by carrying in their hands, burdens of more or less weight, for a certain time every day, with their arms hanging down; and the celebrated Genlis, made her pupils carry burdens on their back, in a basket secured by straps, passing over the shoulders, and under the arms. In this way, indeed, the shoulders might be thrown back, and the shape improved. Care, however, must be taken, that the weight can be carried with facility.

8. *Balancing.*—If we endeavour to preserve the equilibrium of our own bodies, or to balance with our hand any thing that is continually in danger of falling, we shall find

---

* When the round perforated quoit cannot be got to play with, horse shoes are made use of, and even round and smooth stones may answer.

prompt, judicious, adroit movements, and bendings of the body necessary. By practising these arts, hardihood, presence of mind, and justness of eye, are promoted; all which are useful acquisitions. There are various exercises connected with the preservation of equilibrium; as, 1. Balancing our own body; and, 2. Extraneous bodies.

1. Our own body may be balanced, by standing on one leg,—by balancing on the upper edge of a plank, fixed in the ground,—by walking along the tops of a wall,—by walking on a round pole fixed at different heights,—by using a see-saw, or a stout plank supported in the centre, and capable of moving upwards or downwards,—by walking upon stilts, by which courage, pliability of body, and capacity of preserving the balance, on long legs that end nearly in a point, are obtained.

2. Balancing extraneous bodies, is also an amusing and beneficial exercise; and by our endeavours to prevent the object from falling, the accuracy of the eye is exercised; caution and attention are excited; and we learn a promptitude, scarcely by any other means to be acquired. This art can easily be obtained, by supporting a staff, of any given length, made heavier at the top than at the bottom, and preserving it in due balance, though shifting it from one finger to another; and preserving its equilibrium, though standing still, walking, running, sitting down, rising up, &c.

9. *Climbing.*—To strengthen the body, to fortify the courage, and to increase the truly useful capacity for escaping from various dangers, climbing is one of the most advantageous exercises in which boys can be instructed *. The

---

* It is said, that a quack in London got a great deal of money, by persuading many people that he could cure them of the gout *by exercise;* and

climbing of trees and walls, for instance, greatly tends to promote bodily agility, and consequently health. Youth are thus familiarized with various dangers, not always to be avoided in common life; and being habituated at an early age to dangerous situations, are thus secured from that dizziness which has proved so fatal to many *. It is well known, that the art of climbing is indispensably necessary for seamen, who, by constant use, acquire the power of mounting the loftiest masts, in a manner that seems incredible to those who have not practised that art.

10. *Skipping.*—It is advantageous frequently to have obstacles to surmount, in performing things that are in themselves easy. By this we both promote expertness, firmness of action, and presence of mind, which are objects of no small importance in education. Skipping with a rope or hoop †, is nothing more than running and leaping with additional obstacles. Gentle running is not difficult of itself; but if a boy is required to hold a cord in both hands, and to throw it over his head, and under his feet, at every second step, it then becomes necessary to keep time in moving the feet; and the arms likewise are thrown into regular motion. This is a most beneficial exercise, particularly in the winter season; and if regularly persevered in, effectually prevents chilblains. When young people, also, are taught to dance with the skipping rope, the effect, when accompanied with music, is peculiarly striking.

Sometimes

---

that the exercise which he compelled them to try, was climbing up a ladder, and getting down again.

* Walking on the tops of walls, is an excellent mode of preventing dizziness.

† Skipping with a hoop resembles skipping with a short rope, only using a hoop in its stead. This exercise tends to render boys active, and is said to be excellent for creating an appetite; but in this country it is more usually exhibited by rope-dancers, than included among youthful exercises.

Sometimes skipping is done with a long rope, swung round regularly by two persons, and a third jumping over it. It requires quickness and attention to the right point of time, but is not so useful, nor in such general practice, as skipping with the short rope.

11. *Sliding.*—Sliding upon the ice, appears to have been a very favourite pastime, among the youth of this country, in former times; at present, the use of skates is so generally diffused throughout the kingdom, that sliding is but little practised, except by children, and those who cannot afford to purchase skates. It is probable that sliding gave the first idea of the possibility of skating.

12. *Skating.*—Skating is by no means a recent pastime. It was certainly known in England in the thirteenth century; but was of still older date in the more northern countries, where it was the boast of their chieftans, that they could traverse the snow upon skates of wood. Too much cannot be said in favour of that elegant and healthy exercise, which is certainly superior to any thing that can be classed under the head of motion, and which indeed ought to be introduced into universal practice, wherever the climate will admit of it *.

13. *Swinging.*—This is a sport, in which the performer is seated upon the middle of a long rope, fastened at both ends, a little distance from each other, and the higher

---

* Salzmann observes, that there is nothing in gymnastics that displays equal elegance as this exercise. Sometimes the skater, like the birds sailing through the air, with wing unmoved, glides along, as if impelled by the mere energy of volition: at other times, gracefully wheeling, in all the intricate curves which fancy can conceive, he wantons securely upon that slippery surface, which the unpractised foot dares hardly tread upon; and at other times, he glides along with a rapidity and ease which astonishes every beholder.

above the head the better. It was formerly known by the name of *merritot*, or *merry-trotter*. It is commonly considered as a childish sport, and the adoption of it, by grown people, is ridiculed in the Spectator: yet swinging-machines are certainly useful, where the state of health requires an uniform and gentle motion of the whole body, in pure and open air. It is an exercise, however, which requires some exertion to keep the body perpendicular, or pointing towards the centre of the swing; and it is very apt to be attended with a degree of vertigo, or giddiness *.

Doctor Smith, in his essay on pulmonary consumption, recommends swinging as excellent in that disease. He observed, that by swinging the pulse becomes slower; and the same observation has been made by other physicians, in particular Currie and Ewart. Darwin has made a number of judicious observations, explanatory of this curious circumstance, which cannot arise from the general effect of exercise or fatigue, but must be ascribed to a degree of vertigo, which attends all those modes of motion, to which we are not perpetually accustomed †.

A machine has lately been invented, for the purpose of swinging out of doors, which is much run upon at the fairs in the neighbourhood of London; and a good mechanic, might certainly invent a domestic machine, like the *petaurus*, or great swing of the ancients, which might be of the greatest service to people in the extremities of the gout, by diverting their attention in that painful disorder ‡.

14. *Bell-ringing.*—Hentzner, who wrote at the conclusion

---

* Darwin's Zoonomia, Vol. II. p. 691.   † Ibid. p. 282.

‡ Fuller's Medicina Gymnastica, p. 262.

of the sixteenth century, says, that it was usual for the English, after getting merry, to adjourn to some belfry, and to ring the bells for hours together, for the sake of exercise. And it is still not uncommon for young people, more especially in those towns where bells abound, to amuse and exercise themselves by hiring the liberty of ringing them. Sometimes bells are rendered dumb, and rung for the sake of exercise merely, without any noise resulting therefrom.

15. *Fiving.*—There are various sorts of games played with round balls, as tennis, cricket, golf, the hand-ball, or fives, &c.; but it is proposed at present to confine our observations to the last. In regard to exercises with balls, it has, in general, been observed, that they are extremely useful, as they unite motion and amusement; and they are interesting also, as they stimulate self-love, to endeavour to obtain the honour of a victory, which is claimed as due to agility, strength, and skill united. They were invented with perfect propriety, for the purpose of developing the whole muscular power of the body; of perfecting the external senses, by increasing their accuracy and precision; and for unfolding in youth the germs of more than one sort of useful industry *.

The simplest mode of playing with balls, is known under the name of *fives* in England, as there were generally five competitors on each side. It is an active and healthful exercise, and peculiarly calculated for young people.

Another exercise of this kind, may be here mentioned, which is played with a balloon, or wind-ball. By this pastime, a large ball, made of double leather, is driven to and fro, by the strength of men's hands, with the aid of a round hollow bracer of wood. It is usually practised in the open fields; and is much commended for the healthiness of the exercise it affords; but in Italy, amphitheatres are erected on purpose, with seats for the spectators, where they play at a game with a wind-ball, called *Pallone* by the modern Romans, and which requires a great deal of strength and dexterity.

---

* Hygiëne, by Hallé. See Code of Longevity, Vol. III. p. 310.

16. *Dancing.*—The ancients celebrated much the exercise of dancing. They said it was invented by the goddess Rhea; and it has been approved of by the greatest men of all ages. Even Socrates, was not only a professed admirer of this exercise in others, but learned it himself when he was an old man; and Cowley's observation seems to be well founded, that so much of dancing at least, as belongs to the behaviour, and proper carriage of the body, is extremely useful, if not absolutely necessary. Every man should strive to having nothing disagreeable, or clumsy in his approaches, and to be able to enter a room with a good grace, and not awkwardly, which, without the aid of the dancing-master, is not likely to be effected *.

In the middle ages, dancing was reckoned among the elegant accomplishments, necessary to be acquired by both sexes; and in the romances of those days, the character of a hero was incomplete, *unless he danced excellently*†.

Locke himself thinks, that children ought to be taught to dance, as soon as they are capable of learning it. Nothing, he observes, contributes so much to a becoming confidence and behaviour, or raises them sooner to the conversation of those above their age. For though dancing consists merely in outward gracefulness of motion, yet it gives children manly thoughts, and a proper carriage ‡. But they ought to have a good master, who knows what is graceful and becoming, who can teach the art, and can point out the mode of giving freedom and easiness to all the motions of the body. One that teaches not this, is worse than none at all. To be naturally unfashionable, is better than to have apish affected postures. It is much more passable to take off the hat, or to make a bow, like an honest country gentleman, than like an ill-fashioned dancing-master *.

---

* See the Spectator, No. 67.

† Strutt's Plays and Pastimes, p. 220.

‡ Locke's Treatise on Education, § 67.

Under proper limitations, dancing is an admirable exercise, especially in winter, when the heavy atmosphere, much rest, and sitting, render the blood thick, and dispose persons to hypochondriasis. Moderate dances have every advantage of a gentle exercise, besides the beneficial effects produced on the mind, by cheerful company and music. But when carried to excess, or when performed in heated rooms, and under a confined and vitiated atmosphere, it has frequently been attended with very pernicious consequences, occasioning spitting of blood, consumption of the lungs, and inflammatory disorders †. After dancing, cooling drinks, and above all, ice, ought to be particularly avoided, as well as exposure to a draught of air.

Two

---

* Locke's Treatise on Education, § 196.

† Willich's Treatise on Diet and Regimen, p. 450. See also Adair's Medical Cautions, p. 404. Dancing is certainly an exercise strongly deserving commendation, as it tends to unite gracefulness and regularity of motion, with strength and agility. But it ought not to be made too much a business of. People of rank are too apt to think of nothing but gracefulness of demeanour. No sooner has the boy entered his sixth year, than the dancing-master appears, to teach him his positions, &c. But there is a great difference between learning to dance, and forming the body; between elegance of carriage, and muscular strength; between the timid spirit of the young beau, and the manly mind of the rising youth. A pedantic measurement of steps, on a smooth floor, frequently associated with

soft

Two points, regarding this branch of the subject, still remain to be discussed; namely, to consider dancing, 1. As a remedy for disease; and, 2. As connected with warlike exercises.

First, An author who has written expressly regarding the advantages of dancing, contends, that though it is scarcely ever applied to the cure of disease, yet that this sort of exercise is not inferior to any one, provided it is used with discretion; and he ventures to compare it with riding in that respect *. He admits, that riding is to be preferred in consumptions and hectic fevers; but he affirms, that dancing excels in the cure of the spleen, vapours, and melancholic affections; and is also of use in rheumatisms, agues, and in a suppression of the catamenia. He confesses, at the same time, that the preposterous use of this entertaining and agreeable diversion, robs us of its good effects, and renders it a source of disease, rather than a means of prevention; the fashion now being, to begin to dance, about the time when we should be going to rest, and to give over when we should rise.

In regard to the bite of the tarantula, or Italian spider, for which dancing has been considered as a specific, it appears, that what has been so often related upon that subject has no solid foundation. The bite is attended with no

---

soft and melting passions, contribute little or nothing to health, as a bodily exercise, and far less to the attainment of what may be included in one single word, *manhood*. It is frequently, indeed, rendered extremely prejudicial to the health both of the mind and body, by concomitant circumstances. It should, therefore, be used with caution by the young, though it is a symbol of mirth and gaiety. See Salzmann's Gymnastics for Youth, p. 13.

* See Medicina Musica, or a Mechanical Essay on the Effects of Singing, Music, and Dancing on Human Bodies, by Richard Browne, one Vol. 8vo. printed at London anno 1729.

no dangerous symptoms, and the wonderful stories told of its virulence are grossly exaggerated, for it will cure of itself. The truth is, that the whole is an imposition of the peasants upon travellers who happen to pass through that part of Italy where these spiders abound, and who procure a trifle for suffering themselves to be bitten by the tarantula, and affect the whole train of symptoms which music and dancing are supposed to remove. These stories related of the tarantula-poison, have been credited by some of the best and gravest physicians *. It is thus that falsehoods prevail for a century or two, and mankind at last begin to wonder how it was possible to keep up the delusion so long †.

In regard to warlike dances, they were common among the Greeks ; and that sort, known under the name of *the Pyrrhic dance*, in imitation of the Grecian tactics, was particularly celebrated. It is proper to observe, as a curious fact, that there are still some remains of the ancient warlike dances of the Celts, to be found among the Highlanders of Scotland. The sword makes a principal part of the entertainment ; and the enthusiasm with which these dances are exhibited, is well calculated to excite an ardent military spirit among those who behold them ‡.

Having thus gone through the various sorts of youthful exercises, in as full a manner as the nature of this work would admit of, it is impossible not to observe, how much it is to be lamented, that more attention is not paid to so important a branch of education, not only under the eye of parents, but at schools and universities *. Exercise of some sort or another, (and the more active the better), is essential for youth. The delicate springs of our frail machines, lose their activity, and became enervated, and the vessels are choked by obstructions, when we neglect, too much, bodily exercise. We should therefore appropriate our exercises to our years; and in our youth a foundation should be laid, for that taste for action, which must preserve and improve our bodily and mental powers, at every future period of our life.

---

* They are also mentioned in Derham's Physico-Theology, Book IV. ch. 3.

† See Goldsmith's Animated Nature, Vol. VII. p. 265.

‡ Sword dances are also described by Tacitus; and were held in high repute among the ancient Germans, whence it descended to the Anglo-Saxons, and was in former times not unusual in England. See Strutt's Sports and Pastimes, p. 165.

2. *Manly Exercises.*

There are several sorts of exercises, the foundation of which may be laid in our youth, but some of which may also be practised, even in manhood; among these may be included, 1. Tennis. 2. Cricket. 3. Golf. 4. Shinty. 5. Swimming. 6. Rowing. 7. Angling. 8. Hunting. 9. Gardening; and, 10. Agriculture.

1. *Tennis.*—This game is supposed to have originated in France, and was anciently considered to be a healthy exercise, well calculated for the nobility, and even becoming a prince. It resembles, in many respects, the game which Galen so much extols, under the name of *the small ball.* If used in moderation, it has hardly its equal, amusing

---

* In the German universities, besides other inferior sorts of teachers, as drawing-masters, &c. there is a *vaulting-master*, who teaches some useful exercises, such as vaulting on horseback, &c. by which the arms, in particular, are strengthened.

ing the mind, and exercising the whole body at the same time. But it is apt to be carried to excess, from which many have suffered.

2. *Cricket.*—This is a well known game, played, not with a crooked, but with a straight bat. There was of old, a pastime called *club-ball*, played only by two persons, from which Strutt imagines cricket originated. It is certainly a laborious and manly game, and merits that countenance which it receives from many persons of rank and property in this country. At the same time, many consider it too violent, and unnecessarily fatiguing, and prefer the more gentle exercise of the golf *.

3. *Golf.*—There are many games played with a ball, that require the assistance of a *club* or *bat*, and perhaps the most ancient among them, is the pastime now distinguished by the name of golf or goff. It is much practised in Scotland, and is played there to great perfection; but it was probably derived from England, where it was certainly known in the reign of Edward III †. Indeed, the English

---

* *Trap-ball* is anterior to cricket, and probably coëval with most of the early games played with the bat and ball. It is, however, but a childish pastime, compared to cricket. The *northern-spell* is a game played also with a bat or bludgeon, but it possesses little variety, and is by no means so amusing to by-standers as *cricket*, or even *trap-ball*. The *tip-cat*, or game of cat, is played with a cudgel or bludgeon, like trap-ball; but instead of a ball, a piece of wood, called *a cat*, in its shape like a double cone, is made use of, which, when struck smartly with a cudgel, rises with a rotatory motion, high enough, as it falls, to be beat away like a ball. Strutt's Sports and Pastimes, p. 84.

† In the reign of this monarch, the Latin name *cambuca* was applied to this pastime. This game is frequently called in English *bandy-ball*, from the club or bat with which it was played being bent or crooked. It is said to have originated from the Roman game called *paganica*, which was played with a ball of leather, stuffed with feathers. Strutt's Sports and Pastimes, p. 80.

probably took it from the Continent, as in Holland there is a game played with a ball, called *kolf*, which, though not in every respect similar, being played in a covered and enclosed place, yet, as a ball and a crooked bat or club are made use of, it may have given the first idea of golf *. In regard to the latter diversion, it is well calculated for exercising the body, and may be always taken in such moderation, as neither to over-heat nor fatigue. It has, in that respect, the preference over cricket, tennis, or any of those games which cannot be played without violence †.

A taste for this ancient diversion, is kept up in different parts of Scotland, by the institution of societies for that special purpose; and amongst other means of exciting attention to this mode of exercise, a singular plan has been adopted, that of purchasing a silver club, which is to be played for annually, and is to remain for one year in the possession of the victor; but he is obliged to append a medal to it, when he restores it to the company. This is so pleasant and healthy an exercise, that any attempt to enclose the fields in which it can be played with advantage, ought on no account to be permitted ‡.

There was a game called *pall-mall*, which, it is said, originally resembled the golf, though some describe it as differing from it materially, at least, according to the manner in which it was played in latter times. It was a fashionable amusement in the reign of Charles II. who, with his courtiers, frequently exercised themselves in this pastime, in a walk in James's park, which, from that circumstance, was called *the Mall* *. It was probably nothing else but the Dutch game of *kolf*, so accurately described in the Statistical Account of Scotland, and which Charles would probably learn, and take a liking to, during his residence in Holland.

---

* There is a particular account of the Dutch game called *kolf*, drawn up by the Reverend Mr Walker, in the Statistical Account of Scotland, Vol. XVI. p. 28.

† Buchan's Domestic Medicine, Note, p. 80.

‡ See Statistical Account of Scotland, Vol. XVI. p. 30.

4. *The Shinty.*—This is another favourite Scotch game, but of a nature more active and violent than the golf. It is played with a crooked club, and with a ball of wood, which is driven from one boundary to another, by opposing parties, who struggle with all their might to drive the ball to the boundary, which their opponents are obliged to protect. It was formerly much more common among grown people, than it is at present, even parishes or districts contending with each other for superiority in this respect; but at present, it is principally become the amusement of boys at school. There is a similar game in England, known under the name of *hockey*.

5. *Swimming.*—The advantages of bathing are so well known, that it is unnecessary to dwell on them in this place; but when it is accompanied by the exercise of swimming, it is doubly useful. All beasts can swim; consequently swimming is a natural and useful faculty bestowed upon every animal, because all animals are perpetually exposed to the danger of falling into an element so generally abundant. Swimming is highly favourable to activity, as well as cleanliness; and, by learning that art, a person may not only often save his own life, but may be the means of rescuing a fellow creature, perhaps a near relation or friend,

from

---

* Strutt's Sports and Pastimes, p. 82. It was recently played, I understand, at St Andrews in Scotland.

from a watery grave. The Athenians considered this ar of such importance, and so essential to be learned, that when they wished to express a contemptuous idea of the knowledge of any one, they said, that he could neither read nor swim *.

Swimming is an exercise of great antiquity, and it certainly unites the advantages of cold bathing, to muscular exertions. It is an art which ought, in particular, to be cultivated by those who follow the military profession. It ought to be learned as soon as a youth is of an age fit for that purpose, and has any one to teach him. Swimming in salt water, is particularly to be recommended, being not only of use as an exercise, as it may be the means of preventing or curing various disorders. Besides the advantages of this practice, considered in the view of exercise, as well as of safety in the time of danger, it is also of much consequence to be often bathing in cold water, during the heats of summer, provided a person is careful not to go into the water when at all warm †.

6. *Rowing.*—This exercise strengthens the arms, and the upper parts of the body, and is good for the lungs. Both the Britons and Saxons were expert in the management of the oar, and thought it by no means derogatory for a nobleman of the highest rank, to row or steer a boat with dexterity and judgment ‡. In modern times, the boys at some of the great schools, situated near navigable rivers, as Westminster and Eton, amuse themselves also with this exercise ;

---

* The reproach in Latin was, ' nec literas didicit, nec natare.' See Locke's Treatise on Education, § 8, and Salzmann's Gymnastics for Youth, p. 339.

† Locke's Treatise on Education, § 8.

‡ Strutt's Sports and Pastimes, p. 69.

but as it requires the strength of more advanced years to do it effectually, rowing is, with much propriety, included among the manly exercises, and ought to be more cultivated than it is.

7. *Angling.*—This, though not a very active, yet, on the whole, is a very healthy exercise. It amuses the mind, and gently exercises the body; and, above all, is useful to the lungs, as the air above running streams is always of the purest sort. The angler is often exposed to wetness of feet; but any danger from that circumstance is easily guarded against when the sport is over. Indeed, fishing, in general, is a healthy amusement; and it is remarked, in particular, that those who are employed in catching salmon in rivers, are remarkably healthy.

8. *Hunting.*—Of all the rural exercise, hunting is the most ancient, and was originally attended to in this, and in other countries, more as a means of procuring food, than of pleasure or exercise. A celebrated poet, (Dryden), seems to consider this as the best, at least the healthiest mode of obtaining subsistence. He observes,

> By chace our long liv'd fathers earn'd their food,
> Toil strung their nerves, and purify'd their blood;
> But we, their sons, a pamper'd race of men,
> Are dwindled down to threescore years and ten.
> Better to hunt in fields, for health unbought,
> Than fee the doctor for a nauseous draught.

Among the ancients, hunting was esteemed, not only a manly and warlike exercise, but as highly conducive to health. The famous Galen recommends it above all others, as not only exercising the body, but giving delight and entertainment to the mind. And he calls the inventors of this art, wise men, and well skilled in human nature *. It

---

* Lib. de Parvæ Pilæ Exercitio. See also Cynegetica, or Essays on ting, p. 211.

was one of the qualifications which Xenophon bestowed on his Cyrus, that he was a hunter of wild beasts.

Among the various sorts of hunting, the art of training and flying a hawk, for the purpose of catching other birds, may be included. It is generally placed, indeed, at the head of rural amusements, being a pastime, which was of old peculiarly followed by the nobility of this and other countries; and indeed, none but persons of great wealth, could afford the expence of this amusement. The practice of hawking, however, declined, from the moment that the musket was brought to perfection, which pointed out a method more ready and more certain of procuring game, and, at the same time, afforded an equal degree of air and exercise. The immense expence of training and maintaining of hawks became then altogether unnecessary *.

It is a misfortune attending hunting, and other exercises of that sort, that such as practise them, dedicate themselves entirely to those recreations, as if they were a trade, and can think of nothing else. This may do very well for a game-keeper or a whipper-in; but it is a disgrace to persons who probably have received some education, and whose rank and property gives them other duties to perform, to be totally absorbed in such recreations †.

9. *Gardening.*—The labour attending gardening, requires so little exertion, that it ought to be accounted a beneficial exercise, not only to the healthy, but to the invalid; and there can be no doubt, that from the fresh opened earth, salubrious exhalations are copiously diffused. Even the aged, who are unable to dig or to weed the ground, yet

---

* Strutt's Sports and Pastimes, p. 18 and 23.

† Hart's Diet of the Diseased, p. 215.

may find means of employing themselves in a garden, as in thinning fruit upon the trees, managing espaliers, trimming of shrubs, and flowering-plants, &c.* and may thus obtain a healthy exercise, without much labour. Cyrus thought gardening so little beneath the grandeur and dignity of a throne, that he shewed Xenophon a large field of fruit trees, all of his own planting.

10. *Agriculture.*—Rousseau insists upon it, that every youth should learn a trade, which he calls *an estate for life*, because, whatever befals him, he will thus be able to earn a livelihood. Many trades have been recommended for that purpose, as the smith, the carpenter, and the mason ; also, the turner, the piano-forte maker, the book-binder, the basket-maker, &c. But the time which it requires to learn those arts, (for which, in general, an apprenticeship is thought necessary), and the persons with whom a young man might be led to associate, render such plans unadvisable. But there are two arts, (that of the gardener and the husbandman), which cannot be too strongly recommended, as in every respect superior acquisitions. They are the most useful of any, and the most essential. They

---

* Salzmann makes the following observations regarding the propriety of teaching gardening to young people. The occupation of a gardener I would strongly recommend, as well adapted to children. Every boy, where it is practicable, should employ part of his time in this pleasing occupation, which has a valuable tendency to expand the mind. It is a delightful sight, to see youth and innocence attached to nature, and our original destination. Here plans are formed, and a piece of waste ground is gradually dug up, enclosed, planted, watered, and kept in order, by the exercise of juvenile powers ; the important ideas of the production of something by our own exertion, the value of manual labour, and articles of food, are instilled into the mind ; and the disappointment of pleasing hopes, compensated by fresh exertions, keeps the mind in activity, and teaches it to think lightly of the failure of its expectations. Salzmann' Gymnastics for Youth, p. 432.

cannot be overstocked. They are better calculated for enlarged and liberal minds. They are more interesting, from the variety of the objects connected with them; and, in a view to health, they are certainly superior to every other *. It is much to be lamented, therefore, that experimental farms are not established in various parts of the kingdom, where youth might be taught the principles and the practice of arts so essential for the existence of every political community, and by which they might always secure the advantages of a healthy and useful occupation.

These observations are applicable to almost every well educated person; but more especially to those possessed of landed property, or who are likely to live in the country. To them, agricultural pursuits must furnish by far the most wholesome exercise, the most amusing to the individual, and the most useful to the state. The records of antiquity are full of instances, of the greatest warriors and statesmen being devoted to husbandry †.

Those whose vanity or ambition would induce them to despise such pursuits, ought to be directed to turn their attention to the history of Dioclesian; who, after having governed the Roman empire for a period of twenty years, at last voluntarily resigned the reins of government, retired to his native birth-place, and spent his time in cultivating his garden, from which he derived so much real happiness, that he refused to resume the imperial power. That well-known

---

* The great increase of inhabitants in infant colonies, and the longevity of such as follow agriculture every where, evidently prove it to be the most healthful, as well as the most useful employment. Buchan's Domestic Medicine, p. 76.

† Locke's Treatise on Education, § 204.

known character, Charles V., who, including his American dominions, governed a more extensive empire than had ever fallen to the lot of any other man, retired also from power, and in the latter period of life, as long as his strength would admit of it, cultivated the plants of his garden with his own hands, and found more true satisfaction in that innocent employment, than in all the idle pomp of dignity and power.

On the subject of manly exercises in general, it has been justly mentioned as a subject of regret, that these, and the gymnastic diversions and exercises to be afterwards described, are now so little practised. Such pastimes make people take more exercise than they would otherwise do, and are of the greatest service to those who are not under the necessity of labouring for their bread. As active diversions lose ground, those of a sedentary kind seem to prevail. Sedentary diversions are of no other use but to consume time. Instead of relieving the mind, they often require more thought than either study or business. Every thing that induces people to sit still, unless it be some necessary employment, ought to be avoided *.

3. *Gymnastic Exercises.*

Gymnastic exercises were originally considered in a military point of view alone, but philosophers and physicians soon perceived, how conducive they were to health and strength, how many ailments vanished in the midst of those various and complicated movements which they rendered necessary, and what energy these motions imparted to the most important functions of the body. They observed, that even convalescents, by adjusting the use of these exercises to their respective degrees of strength, recovered expeditiously, even from a long and painful train of maladies. Hence the gymnastic art became an object of public attention, an important branch in the education of youth, and materially contributed to the preservation and to the perfection of the human race *. So essential at last, were such exercises considered to be, more especially as the youth were thus hardened to the toils of war, that rewards were appointed for those who excelled in them, and bestowed with the greatest solemnity.

---

* Buchan's Domestic Medicine, p. 79.

The ancient Persians made a great use of gymnastic exercises. Their youth were early trained to bend the bow, to throw the javelin, and afterwards to contend with each other, for the prize and glory of dexterity and strength. Until they reached, indeed, their twenty-fifth year, they served an apprenticeship to war, in all its various forms †.

In considering the subject of gymnastic exercises, it may be proper to advert to the distinctions which have been made between the medicinal, gymnastical, and athletic ‡: 1. *The medicinal*, was merely for the preservation or restoration of health. 2. *The military*, was for the purpose of acquiring strength sufficient to undergo the fatigues of war; and, 3. The object of *the athletic* was, to impart to the body all the strength which it could possibly acquire. It was this excessive strength of constitution, to which alone the term *athletic* was applied. All the ancients reprobate this excessive degree of bodily vigour ; they regard it as passing the boundaries of nature, as injurious to the mental functions, and even to the stability of health *.

---

* Hygiëne, by Hallé. See Code of Longevity, Vol. III. p. 290.

† Ibid. Vol. III. p. 288.

‡ Galen divided the whole of gymnastics into the *warlike*, *injurious athletic*, and *truly medicinal*.

Herodicus, who instructed Hippocrates himself in the art of physic, being master, we are told, of one of the *Grecian palæstræ*, or *gymnasia*, observed, that the youths under his care, who took their proper exercises, were in general very healthy and strong ; he thence began to impute it to their constant exercising. Indulging this thought, he began to establish these exercises as a means of preserving or recovering health, and formed certain rules for that purpose, which have been lost for many years. They were once, however, in great esteem ; and Herodicus is to be accounted, if not the inventor, at least the first great improver of so useful an art †.

The ancients, in general, had so high an opinion of gymnastics, that Plato and Aristotle, not to mention other great authors, considered a commonwealth as defective, in which they were neglected : and this most justly ; for if the improvement of the *mind* ought to be our constant aim, that cannot be accomplished, nor can any thing of worth or im-

---

* The very severe censures which occur in ancient writers against gymnastic exercises, relate to athletics alone, the professors of which were distinguished by the dissoluteness of their manners.

It is said, in a fragment of Euripides, that among the thousand evils of Greece, the worst is, *the race of athletes* ; and Galen applies to their art, the epithet of opprobrious, and speaks against it, in many places, with great asperity. (Ad Thrasibulum, c. 36, 37, 46). In one place, in particular, he observes, that undoubtedly every well ordered republic, hates and detests this sort of art, which depresses all vital strength and energy, inducing no healthy state of the body, &c.

Seneca also condemns the ancient athleti, as spending their whole time between oil and wine ; anointing their bodies, preparatory to the contest, and drinking after it was over. See Salzmann's Gymnastics for Youth p. 195.

† See Burton's Treatise on the Non-naturals, p. 245.

portance be effected, without the aid of the *body*. It is incumbent on us, therefore, to promote the health and strength of the body, that it may be capable of serving the mind, and of assisting, instead of impeding its operations. For this reason, Plato, in Protagoras, calls him *a cripple*, who, cultivating his mind alone, suffered his body to languish through inactivity and sloth *.

The gymnastics of the ancients still deserve to be sedulously studied, and cultivated with suitable alterations. They would certainly prove the means of rendering those, whom modern arts have enervated, once more healthy, strong, and *hardy*. For this purpose, let strength of body, and manliness of mind, become as much in vogue, as weak nerves, and *sentimentality*, which have, for so many years, been so fashionable †. This would tend greatly to promote the beauty of the person; for it is universally admitted, that the Greeks were eminent, for symmetry of their form, and the elegance of their shape; and though this is partly to be ascribed to their happy climate, their dress, their mode of life, &c. yet, to that object, their gymnastic exercises also must have greatly contributed ‡.

Lucian observes, that gymnastics perform the same office to the human frame, as winnowing does to corn; the chaff and impurities are blown away, the pure grain is only left behind. Thus, all useless flesh is expelled, and nothing retained, but that by which health and strength can be imparted §.

Such, indeed, was the strength which the ancients acquired, by means of their gymnastic and manly exercises, that their military arms and accoutrements weighed about sixty pounds, or nearly double the amount of those of the modern.

---

* Salzmann's Gymnastics for Youth, p. 113.

† Ibid. p. 165.

‡ Ibid. p. 168.

§ Lucian, Anach. sect. 25.

The ancients originally admitted only of five gymnastic exercises; leaping, running, throwing the discus, darting the javelin, and wrestling; afterwards, boxing, and probably other exercises were added; but the name of *pentathlon*, or the five games, was retained *.

It is our intention, in discussing this subject, to consider gymnastic, including exercises of a military nature, under the following general heads: 1. Leaping. 2. Foot-racing. 3. Playing with the foot-ball. 4. Hurling. 5. Wrestling. 6. Boxing. 7. Cudgelling. 8. Fencing. 9. Archery; and 10. Modern military exercises †.

1. *Leaping.*—This ranks among the first of the gymnastic exercises; it strengthens, and gives elasticity to the feet, legs, knees, thighs, and indeed the whole frame; it braces every muscle, invigorates the courage, incredibly improves the faculty of measuring distances by the eye, and gradually imparts such a command over the balance of the

---

* See Salzmann's Gymnastics for Youth, p. 193. The same author has given a review of gymnastic and manly exercises, classifying them according as they act upon the body in general, or particular parts of it; for instance, the shoulders, the chest, the lungs, the hands and arms, the spine and muscles of the back, the hips, the thighs and knees, the legs and feet, the organs of speech, &c.; and this classification must furnish useful hints to those who, may be desirous to improve different parts of the body, or to remove any personal defects, by means of exercise. See Salzmann's Gymnastics for Youth, p. 413.

† The author who has given the best account of the ancient gymnastic exercises, is West, in a Dissertation on the Olympic Games, prefixed to his translation of the Odes of Pindar. See also Potter's Antiquities, Book II. Chap. 21. Mercurialis (Hier) in his works, *de Arte Gymnastica*, has likewise given a very laborious description of these exercises.

body, as tends greatly to secure us from all hazard of any dangerous falls. In common life, too, where brooks, ditches, and a thousand obstacles, may be passed by a leap, the art is of no small utility. Boys taught this art, will not cry when they come to a rivulet, but jump over it: and that important faculty, *resolution*, will make a part of their character when grown up to men *.

Leaping admits of great variety, which is very desirable in this, as well as in all other gymnastic exercises, to maintain and animate that ardour which is necessary to acquire them: but it is impossible to enter into minute details in a work of this sort †.

The exercise of leaping, among the ancients, was confined to distance, and did not extend to height; one reason for which might be, that they were accustomed to leap with weights in their hands, in order to poise their bodies, and swing themselves forward in the leap; and sometimes also they exhibited with weights upon their heads or shoulders. The distance they have leaped, could not be effected without constant practice, and some assistance. A Spartan is said to have leapt fifty-two feet, and a native of Crotona even fifty-five.

---

* Salzmann's Gymnastics for Youth, p. 196.

† Ibid. p. 207. This intelligent author has explained the various sorts of leaping with much ability; as, 1. Leaping with weights, so as to increase the difficulty and exertion. 2. The ballotade, or raising both feet at once, with a sudden jerk, striking behind. 3. The standing jump. 4. The running jump. 5. Vaulting on horseback; which is a most useful exercise, but is properly a branch of horsemanship. 6. Leap-frog, or when one person jumps over another. 7. Leaping in height with a pole. 8. Leaping from a height, with or without a pole; a most useful practice, as the object is to accomplish the highest possible leap, with the least violence to the body. 9. A leap in length without a pole, or with one, by which a boy has cleared 21 feet. 10. A leap in height and length, and in depth and length at the same time.

The most famous leaper in modern times, is one Ireland, a native of Yorkshire. In the eighteenth year of his age, by a fair spring, without any assistance, trick, or deception, he leaped over nine horses, standing side by side, and a man seated on the middle horse. He also jumped over a garter held fourteen feet high; and, at another jump, he kicked a bladder hanging at least sixteen feet from the ground *.

2. *Foot-racing.*—This was one of the most celebrated branches of the gymnastic art in ancient times. Swiftness was reckoned one of the best endowments of which a man could be possessed: hence *swift of foot*, was the constant epithet by which Homer distinguished his favourite hero Achilles. The distances they ran varied; originally, the race was short, amounting only to a stadium, or one hundred and twenty-five paces; but afterwards the exercise was extended to seven, twelve, and even fifty-four stadia; so that besides agility and swiftness, a great strength of body, and a command of wind, was necessary, for the holding out through so long a course. The poets use great hyperboles in order to raise a high idea of the swiftness of the victor. One poet, in describing a runner, says,

> "He seem'd as if on feathered feet he flew."

It certainly must have been carried in those days to a very great perfection; but the feats which have been performed in England, in that respect†, seem to rival, if not surpass, those even of ancient Greece. Some have run at the rate of ten miles an hour, even in sultry weather; four miles have been run at York in twenty minutes and nineteen seconds. The famous West of Windsor, could run forty miles in five hours and a half, which is nearly eight miles an hour; and in eighteen hours, he could have gone over one hundred statute miles.

---

* Strutt's Plays and Pastimes, p. 176.

† It is well known, that persons are trained in England to running, by a particular process, which generally requires at least a month, and the particulars of which I thought it of considerable importance to ascertain. The contest for speed, has been carried to great perfection in various parts of England, particularly in Lancashire. A quarter of a mile has been run about a second or two under a minute, and the half mile in two minutes;

3. *The foot-ball.*—This pastime is well entitled to be included amongst the gymnastic exercises, from the violence with which it is played, and the strength and activity which is necessary for those who endeavour to excel in it. It was formerly much in vogue among the common people of England, and is mentioned with applause by several of the old poets; but of late years it has fallen into disrepute, and is but little practised *.

4. *Hurling.*—The inhabitants of the western counties of England have long been famous for their skill in the practice of an ancient exercise called hurling. A particular description of this pastime is given by Carew, in his Survey of Cornwall. He mentions that this game was carried on with so much spirit, that sometimes two or three or more parishes agreed to *hurl* against two or three other districts, of similar population or extent; and he describes the hurlers as taking their way over hills, dales, hedges, ditches, and through bushes, briars, mines, plashes, and rivers; so that sometimes twenty or thirty might be seen lying and tugging together in the water, scrambling and scratching for the possession

---

minutes; one mile a quarter of a minute under the five; two miles has been done under ten minutes; 100 yards has been done under ten seconds.

* In Strutt's Sports and Pastimes of the People of England, p. 79, there is a particular description of this pastime, to which the reader is referred.

possession of the ball, which was the object of contest*. It is impossible such exercises should not render men active, and hardy, and uncommonly strong.

5. *Wrestling*.—This was a very ancient exercise, and constituted the most important part of the Grecian system of gymnastics†: a triumph indeed in this exercise, was considered to be of such importance, that the victorious athlete received the applause of the whole nation; and a breach was made in the walls of his native town, to introduce him in triumph. Many authors have objected to this exercise; and it is too apt to degenerate into a brutal contest, for the amusement of the spectators; but its use ought not to be totally prohibited, as, in moderation, it serves to strengthen the body, and to promote health‡. It was formerly much practised in England; and the young nobility and gentry were regularly bred to it. In the ages of chivalry also, to wrestle well, was accounted one of the accomplishments which a warrior ought to possess §.

6. *Boxing*.—The art of boxing was much cultivated

---

* See Strutt's Sports and Pastimes, p. 78.

† Theseus is reported to have been the first who reduced wrestling to a science. The combatants contended naked, but had their bodies all rubbed over with oil, or some unctuous matter, and afterwards sprinkled with dust or sand. The victory was adjudged to him who gave his adversary three falls; or who compelled his opponent to yield the contest, when both were thrown upon the ground, by squeezing or breaking his fingers, &c.; this was called *Pancration*.

‡ Salzmann's Gymnastics for Youth, p. 247.

§ In the Code of Longevity, Vol. II. app. (163) 3, there is an account of a curious book on wrestling, written by Sir Thomas Parkyns, Bart. in which he describes the qualifications of wrestlers, in the following terms: They must be of a middle size, athletic, full-breasted, and broad-shouldered, for wind and strength; brawny legged and armed, yet clean limbed. Terence's man, that has '*Corpus solidum atq. succi plenum*,' is my promising scholar to do me credit, and be capable to serve his king and country on occasion, and defend his friend and self from insults.

among the ancient Greeks, and the mode adopted at the Olympic games, was of a very serious, and indeed shocking nature. The combatants did not make use of their fists alone, but had their hands surrounded with thongs of leather, (the *cestus*), which were often filled with plumets of lead or iron, in order to add force to the blow. Armed in this manner, the combatants often killed each other, or were desperately mutilated *.

This art has, at different times, been much practised in England, according as it was sanctioned, or condemned, by the fashion, or prejudices of the moment. Public exhibitions of boxing, without which it probably might fall into disuse, are certainly attended with some inconveniences; but, on the whole, they have their advantages. They certainly keep up a bold and manly spirit, not only amongst those who are trained for that purpose, but even among the spectators, who seeing what their countrymen can bear without flinching, must aspire to similar strength of person, and firmness of mind. Indeed it has rather a tendency to lessen the fury and violence of the vindictive passions; for in England, where the art of boxing is particularly practised, and where personal quarrels are frequently decided by the contest of the fist, the number of persons who fall victims to private resentment are few, compared to what is the case in other countries.

---

* It appears, however, from the following epigram of Lucillius, that the consequences of these battles were sometimes very terrible, though the combatants escaped with their lives and limbs.

On a conqueror in the Cestus.

This victor, glorious in his *olive* wreath,
Had once *eyes*, *eye-brows*, *nose*, and *ears*, and *teeth*;
But turning *cestus champion*, to his cost,
These, and, still worse, his heritage he lost:
For by his brother su'd, disown'd, at last
Confronted with his picture, he was cast.

In regard to the effects of being regularly trained to the art of boxing, not only as the means of obtaining strength, but preventing disease, it is proposed to discuss that subject at the conclusion of this chapter.

7. *Cudgelling.*—Instead of contending with the fist, some prefer fighting with sticks or cudgels; and the quarter-staff, or single-stick, as it was sometimes called, was formerly much used in England, more especially in the western parts of the kingdom. A native of Devonshire, with an English quarter-staff, is said to have fought three Spaniards with their swords and poniards [*]. This species of gymnastic exercise, has recently been revived in Somersetshire; and the dexterity, boldness, and manly firmness, which the different combatants exhibit on such occasions, are hardly to be credited. It certainly is an exercise not to be discouraged, as strength, vigilance, activity, and fortitude, are improved thereby; and skill in it may enable a man to defend himself against the attacks of a ruffian [†].

8. *Fencing.*—There is no exercise, with a view to health, better entitled to the attention of those who are placed among the higher classes of society, than that of fencing. The positions of the body in fencing, have for their objects erectness, firmness, and balance; and in practising that art, the chest, the neck, and the shoulders, are placed in positions the most beneficial to health. The various motions, also, of the arms and limbs, whilst the body maintains its erect position, enable the muscles in general to acquire vigorous strength and tone; and in young people, the

---

[*] Strutt's Sports and Pastimes, p. 198.

[†] Salzmann's Gymnastics for Youth, p. 337. note by the translator.

bones of the chest or thorax, necessarily become more enlarged, by means of which a consumptive tendency may be prevented. Various instances may be adduced, where fencing has prevented consumptions, and other disorders. It has been remarked also, that those who practise this art are, in general, remarkable for long life, and for the good health they have enjoyed. These considerations, combined with the graceful movement which it establishes, and the elegant means of self-defence which it furnishes, certainly render the art an object of considerable importance*.

9. *Archery.*—Among the various military arts formerly practised in this kingdom, there was none that was carried to a greater degree of perfection than that of archery. The English of old used the bow for a double purpose. In time of war it was a dreadful instrument of destruction; and many victories were obtained by the strength and dexterity of their archers: and in time of peace, it was a means of obtaining game, and an object of exercise and amusement †. It is still kept up as a healthful amusement;

---

* See a very intelligent letter regarding fencing, by Henry Angelo, Esq. of Bolton-row, Mayfair, London. Code of Longevity, Vol. II. Appendix, p. (165) 4. Locke has the following observations on this subject.—Fencing is a good exercise for health, but dangerous to the life, those who have learned to use their swords, being apt to engage in quarrels, on the confidence they have in their own skill. This presumption makes them often more touchy than they ought to be, regarding points of honour, and fiery and violent on receiving slight or imaginary provocations; and young men are too apt to imagine, that they have in vain learned to fence, if they have never shown their skill and courage in a duel. Notwithstanding, however, these objections, fencing is considered to be so necessary a qualification in the breeding of a gentleman, and has so many advantages in regard to health, and personal appearance, that every gentleman of rank and property, ought to have so striking a mark of distinction. Locke's Treatise on Education, § 199.

† Strutt's Sports and Pastimes, p. 38.

but the use of the musket has become so general, that archery, though it continues to be partially practised, has little chance of recovering its former popularity *. It may be recommended, however, as an exercise, which occupies the time, exercises the faculties, and fortifies the health of those who apply to it; and in one respect is particularly advantageous, being taken in the open air.

10. *Military exercises.*—In the ages of chivalry, martial exercises were in the highest repute; and the young nobility and gentry were trained, under skilful masters, in running, in wrestling, in shooting with the bow, in playing with the sword, in using the pole-ax, in carrying heavy armour, in trying the speed of horses, and in other exercises of a similar nature. It may be proper to add, that in *an accomplished knight*, other acquirements, besides mere strength and agility of body were also expected. It was necessary for him to be skilled in music, to dance with grace, to be successful in hunting; and, above all, to be possessed of urbanity of manners, a strict adherence to truth, and invincible courage. All these accomplishments, joined to the liberal and learned arts, would make indeed a perfect character †.

A spirit for acquiring and keeping up these accomplishments, was preserved by the jousts and tournaments, so celebrated in former times, a description of which cannot be inserted into a work of so limited a nature ‡.

It is much to be regretted, however, that more attention is not paid to warlike exercises in these days. Our soldiers should

---

* Strutt's Sports and Pastimes, p. 46.

† Ibid, Introduction, p. 5.

‡ There is a very good account of jousts and tournaments, in Strutt's Sports and Pastimes of the People of England, Book III. Cap. 1. p. 88.

should be trained, not only to the use of their military weapons, but to other exertions of bodily strength *. It appears from Vegetius, that those who were skilled in military matters among the ancients, were convinced, that daily exercises contributed much more to the health of soldiers, than medicine ; and the Roman soldiers, accordingly, were trained to the service of the field, as horses are for hunting or the course. These habits of exercise, were of great use to them in action, and enabled them to endure the fatigues of war, with much less inconvenience. Above all, it is necessary to teach soldiers to march quickly, and for a number of miles, without being fatigued, or disabled from action. A late respectable officer, (General Simcoe), often lamented how little this essential object was attended to in the British army. The advantage which the French have derived, from the rapidity of their marches, is well known ; and until the nations on the Continent can rival them in this respect, they can hardly expect to be equally successful.

The advantage of training our youth to military exercises, has been already touched upon in a preceding part of

---

* There are some useful observations on this subject, in Dr Jackson's Treatise on the Fevers of Jamaica, p. 401, 409, &c.

The late Sir John Pringle divided military exercises into three sorts. 1. Consists chiefly in the exercise of his arms, which is no less useful for preserving health, than for making him expert in his duty. 2. For enabling him to live more commodiously, as cutting boughs for shading the tents, making trenches around them, for carrying off the water, airing the straw, cleaning their clothes and accoutrements, &c. 3. Diversions, to which the men should be encouraged, by the example of their officers, or by small premiums to those who shall excel in any kind of sports as shall be judged most conducive to health ; but herein great caution is necessary, not to allow them to fatigue themselves too much, especially in hot weather, or sickly times ; but above all, that their clothes be kept dry, wet clothes being the most frequent causes of camp diseases.

of this work *; and it cannot be too strongly recommended. The improvement of the carriage, is a matter of some consequence; but it is still more essential, to animate the courage of youth, to promote a bold and enterprising spirit, and to harden them against bodily pain, which the effeminacy of our common mode of living renders peculiarly necessary †.

It is proper to add, that the advantages to be derived from military exercises, with a view to health, have been sufficiently proved by the beneficial effects which many experienced from them, when the volunteer spirit was at its height, and such numbers of persons, unaccustomed to the use of arms, were regularly trained and disciplined.

The exercise thus obtained, was of infinite service to those among the lower ranks, who were employed in sedentary occupations; and, in regard to the upper orders of society, it certainly was the means of warding off many chronic disorders. Hence it may be observed, that the general training act ought to be enforced, not only with a view of adding considerably to the military strength of the nation, but also as furnishing a most healthful exercise to those who are too apt, in a busy and commercial nation, to give way to indolent habits, and to become unhealthy and enervated.

It is proper also to observe, that the greater number of the gymnastic, manly, and youthful exercises, above described, may, on various occasions, be highly useful, and consequently are well worth acquiring. The natural lot of man is, to live among his fellows: and whatever may be his situation in life, there are a thousand occasions,

where

---

* See Chapter IV. p. 131.

† Salzmann's Gymnastics for Youth, p. 336.

where an individual must desire to render himself agreeable; to be active and adroit; to dance with a grace; to command the fiery steed; to defend himself against a brutal enemy; to preserve his life by dexterity, as by leaping, swimming, &c. Many of the wisest and most benevolent legislators have, therefore, instituted, in their academies and universities, proper methods of enabling youth, who devote themselves to study, to become expert in these important exercises.

In regard to the ancients, the rewards which followed a superiority at the Olympic games, kindled such an emulation and ardour in the several states of Greece, to excel in all the various exercises of which they consisted, that there was scarce a town of any note, boasting of Grecian extraction, in which there was not a gymnasium, or school of exercise, maintained at the public expence, with a view of training up their youth, in a manner best suited, according to the conceptions of those times, to render them useful to their country.

Indeed, besides the military advantages resulting from gymnastic exercises, when kept within due bounds, and directed to the purposes for which they were originally intended, they were of service in other respects; for instance, they gave employment to those whose situation in life allowed them a considerable portion of vacant time, being exempted from any necessity to labour, in order to procure themselves the conveniences of life. Without some such employment, persons of that description are often dangerous to the peace and good order of a country. Those also who were addicted to gymnastic exercises, if they aimed at any great proficiency in those arts, were obliged to observe the strictest temperance and sobriety.

Qui studet optatam cursu contingere metam,
Multa tulit, fecitque puer; sudavit et alsit;
Abstinuit venere et vino [*].

On the whole, it can hardly be doubted that the sports and diversons of a people may be turned to the advantage of the public; and that a wise and prudent government, may excite in the husbandman, the manufacturer, and the mechanic, as well as in the soldier and sailor, and persons in the higher ranks and professions of society, such an emulation, as may tend to promote agriculture and industry, to encourage trade, to improve the wisdom and knowledge of mankind, and to render a country happy in peace, and victorious in war [†].

6. *Healthful Exercises.*

The exercises taken for the purposes of health are, either *external*, as, 1. Walking. 2. Riding. 3. Gestation. 4. Sailing; and, 5. Bowling;—or *domestic*, as, 1. Billiards. 2. Shuttle-cock. 3. Dumb-bells. 4. The load exercise. 5. Pensile beds. 6. Declaiming. 7. Friction. 8. Electricity. 9. Galvanism.

External Healthful Exercises.

1. *Walking.*—There is no exercise more natural to us, or in every respect more conducive to health, than walking.

---

[*] A youth, who hopes th' *Olmypic* prize to gain,
All arts must try, and ev'ry toil sustain;
Th' extremes of heat, and cold, must often prove,
And shun the weak'ning joys of wine and love.——FRANCIS.

[†] See West's Dissertation on the Olympic Games, p. 206.

It is the most perfect exercise in which the human body can be employed; for by it, every limb is put in motion, and the circulation of the blood is effectually carried on throughout the minutest veins, and arteries of the system *. This salutary and most excellent exercise is in the power of every body, and can be adapted, in degree and duration, to the various circumstances and wishes of each individual. Riding on horseback is certainly a most excellent exercise; but it is not general to the whole body, nor can it be taken at all times, nor at any time, without an expence which is not suitable to every condition of life. Valetudinarians, therefore, who have given up the practice of walking, are much to be pitied, for hardly any other exercise can compensate for the want thereof †.

Walking

---

* The following rules are recommended to the attention of those who are attached to this excellent species of exercise. 1. The most proper walk for health is, in a pure and dry air; in the summer season, either in the morning or evening, but by no means in the oppressive heat of the sun; in winter, the best period of the day is an hour or two before the sun begins to descend. Marshy damp fields should be avoided; but hills, and elevated situations, ought to be preferred, not only on account of breathing purer air, but also because the body enjoys a variety of exercise in ascending and descending. During the heats of summer, a walk under the shades of woods or forests is, however, both healthful and agreeable. 2. To read during a walk is an improper custom, highly detrimental to the eyes, and destroys almost all the good effects that can be derived from the exercise. 3. It is advisable, occasionally to change the place where you walk; for the same place, constantly gone over, may excite as many disagreeable, and unpleasant sensations, as the closet or the study. 4. We ought to accustom ourselves to a steady and regular, but not to a quick pace. 5. An agreeable companion contributes much to serenity of mind; but unless the mode of walking is similar, as well as the taste and character congenial, it is better to walk alone, as either the one or the other of the two companions must be subjected to some constraint. Willich's Lectures on Diet and Regimen, p. 447.

† To the delicate and invalid, carriage-exercise is preferable; horse-exercise to the more hardy; but foot-exercise is most convenient, for many reasons. For small is the proportion of mankind, who can afford

to

Walking is of two sorts, either on plain ground, or where there are ascents. The latter is in every respect greatly preferable, as by it the lungs are exercised, and the ascent and descent agitates the body with a useful variety, unless it be very weak. *Celsus* also contends, that a straight walk is better than a winding one *; but surely the latter is more amusing. Walking against a high wind is very severe exercise, and not to be recommended.

In many countries, and more especially in great cities, men

---

to use either a carriage or a horse. Adair's Essay on Diet and Regimen, p. 62. Both the body and the mind are enlivened by walking; and when carried to an extreme, it has often been found highly serviceable in nervous diseases. Turnbull's Medical Works, p. 120.

There is no public walk, in any part of Europe, better calculated for the exercise of walking, than the Calton-hill, near Edinburgh. It is sufficiently high, to enjoy a pure air, without being, at the same time, too elevated. The views from it are the most picturesque and varied imaginable, so that it is impossible ever to be tired of it. On the one hand, you see a flat plain, abounding with villas and gardens, and on the other side a lofty and craggy hill, without the least vestige of habitation, or any appearance of culture. There you see an old city, with every mark of antiquity about it, and terminated by an ancient castle with its battlements; and, adjoining thereto, a new town rising, placed in a most happy situation, constructed in a regular manner, and adorned with buildings that would appear with advantage even at Rome or Athens. On the one hand you see an ancient palace, celebrated as the residence of a long train of royal possessors; and on the other hand, a strong and massy building, erected for the reception and the punishment of those who have transgressed the laws of their country, and been convicted of crimes. Looking to the interior, fertile plains are seen, bounded by lofty mountains; whilst towards the coast, with islands picturesquely situated, a magnificent arm of the sea presents itself, full of vessels of every description, from the humble fishing-boat, which is scarcely visible at the distance, to the stately ship of the line, with all its flags and streamers. There is no scene, in point of variety and magnificence, which, it is said, can be compared to it, except in the neighbourhood of the Turkish capital; but even there, though the city is larger and more splendid, yet in every other respect the prospect is inferior. For many years this walk has unfortunately been much neglected.

* See Grieve's Celsus, Book I. Cap. 2. p. 25.

men have gone to so absurd a length, as to consider walking to be indecorous. In Naples, in particular, it is less disgraceful to steal, than to go on foot; and whoever makes use of his own legs, says Brydone, is taken for a groom[†].

The mode in which a person walks, is a matter of considerable importance. Besides the advantage of walking gracefully, a person may be taught to walk with more ease, and less personal fatigue, than would be the case, without some attention. A light, yet firm and manly step; an upright posture of the body, particularly in regard to the head, the breast, and the shoulders, yet devoid of stiffness; an easy and natural movement of the arms, are what we should chiefly strive to attain[‡]. This, however, depends much upon early and constant practice; and the lessons of the dancing-master may afterwards improve what has been naturally acquired by early habit.

As, from various circumstances, persons in large towns, and engaged in sedentary occupations, cannot take all that exercise abroad, that may be necessary for their health; they ought, as much as possible, to accustom themselves to be walking about, even in their own houses, instead of sitting so much at desks and tables, as is usually the case. This rule is peculiarly necessary to be attended to by literary men; and though such practice does not make up for the want of exercise abroad, yet it is the best substitute for it.

It was an old rule, '*after dinner to sit a while, and after supper to walk a mile,*' but that adage is not consistent with the hours kept in modern times. When supper, however, was

---

[*] Salzmann's Gymnastics for Youth, p. 68.

[†] Ibid, p. 331.

was very early, those who resided in the country might have the advantage of walking two or three miles previous to their going to bed. It is said that such a walk, brought on a gentle breathing sweat, which was favourable to repose; and that next morning, they awaked with a clear head, and found a refreshment from their sleep, of which the indolent have no idea.

The ancients, though much addicted to the foot-race, do not seem to have entered into the spirit of those long walks which are not unusual in modern times, and of which some extraordinary instances are recorded *.

2. *Riding.*—No exercise has been more celebrated, as healthy in itself, and more especially, as useful to invalids, than *riding on horseback;* and in general, it may be laid down as a rule, sanctioned by experience, '*that riding is the*

---

* Perhaps, on the whole, *the most extraordinary* is that performed by one Glanville, a native of Shropshire, in 1806. He started at seven o'clock on a Friday morning, from the fourteenth milestone on the Bath road, to go to the eighty-fifth, and back to the fourteenth, a distance of one hundred and forty-two miles in thirty hours. He was backed for eighty guineas, and the odds were two to one against him. He went off at a brisk walk, and for two miles together he broke into a shuffling walk, at the rate of six miles an hour. His first stoppage was at Twyford, at which place he arrived, and took a bason of soup prepared for him, at five minutes past ten o'clock. He stopped about five minutes at this place, thirty-four miles from town, and refreshed again at Marlborough, and arrived at the eighty-fifth milestone at ten minutes past eight o'clock in the evening. This half of his journey was performed at something less than five miles and a half an hour. The pedestrian returned a few miles on his way back, and refreshed himself on a bed, between two blankets, for about an hour and a half, and arrived at Reading at a quarter past six o'clock on Saturday morning,—he had now twenty-five miles to perform in five hours and three quarters, and he appeared a good deal fatigued. After reclining in a chair for about twenty minutes, and drinking half a pint of mulled wine, he renewed his laborious task, and arrived at his journey's end, at a quarter before one o'clock, and won, with difficulty, by a quarter of an hour; he was attended the whole of the way by two horsemen.

the best exercise for regaining health, and walking for retaining it.'

It was requisite, in former times, for a man of fashion, to understand the nature and properties of horses, and to ride well *; and it is still considered as an accomplishment, which every gentlemen ought to possess.

The advantages attending this exercise, as a remedy for various disorders, will be afterwards explained. It certainly strengthens, in a most effectual manner, the stomach and intestines, and to the hypochondriac, it is an inestimable remedy †. It is less tiresome and laborious to the inferior limbs than walking, so that persons in a weak state of health can use it with less pain or difficulty; at the same time, it must be admitted, that the legs and feet are apt to get stiff and cold by riding, unless some exercise on foot is afterwards taken.

To those whose business does not permit them to devote much of their time to exercise, riding is certainly preferable, more especially in cities, as on horseback they are at once brought out into the fresh air, and the body is so thoroughly agitated, that it does not require to be so long continued as some other exercises, an hour, in general, being sufficient ‡.

The exercise of riding, was not so much recommended by the ancient physicians, because horses were not then so common as they now are; and because they had not then the same conveniences for riding, that we have. In those days they rode without stirrups, which must have been extremely inconvenient, and tiresome to weak persons, and hence, that exercise was then only calculated for healthy and strong men*. Even the modern Italians are so little addicted to horsemanship, that one of their proverbs is, '*a gallopping horse is an open sepulchre*†.'

---

* Strutt's Sports and Pastimes, p. 31.

† The various changes of the air, through which we so quickly pass when riding on horseback, become as it were a new air bath, by which the fibres are strengthened; and the various new scenes and objects we are constantly observing, tend to amuse the mind. Lynch's Guide to Health, p. 288.

‡ Willich's Lectures on Diet and Regimen, p. 456.

Riding the great horse, is principally to be learned in towns of considerable size, and is one of the best sorts of exercise, for health, to be met with in those places of ease and luxury. As far as it conduces to give a man a firm and graceful seat on horseback, and to make him able to teach his horse to stop, and turn quickly, and to rest on his haunches, it is of use to a gentleman, both in peace and war, but this is an exercise, which ought not to be made a business of, nor does it deserve to take up more time than is necessary for health ‡.

The following miscellaneous observations regarding riding, are submitted to the consideration of those who are attached to this useful exercise.

1. Riding

---

[*] Fuller's Medicina Gymnastica, p. 231.

[†] Fuller's Medicina Gymnastica, p. 234. They consider gallopping to be so desperate an achievement, that at their races, the horses have no riders, lest their tumbling off should destroy the pleasure of the entertainment.

[‡] Locke's Treatise on Education, § 198. To persons who are bad riders, the riding school cannot fail to be extremely useful; for the regular manner of training the horses there, their uniform and steady motion, the attention paid to the proper posture of the rider, by keeping his breast and abdomen erect, and the legs properly extended, are all circumstances very favourable to the convalescent patient. But, even here, it is the moderate kind of exercise only, that promotes real benefit, *in a medical sense*; continued furious driving, and hard trotting, are always extremely dangerous to invalids.

1. Riding is certainly suitable to the healthy and the active, but it ought not to be much indulged in, until the bodily powers are more than half developed. If a youth is not remarkably strong and active, or has not horses of an inferior size at command, he ought not to be permitted to ride much before twelve years of age. 2. Every constitution cannot equally bear to ride, much less in the most rapid manner. It is the more necessary to be particular on this head, because rough exercise is the darling idol of the English; and youth, fired by examples from the Greek and Roman games, are apt to engage too far in manly sports, not promiscuously beneficial to all*. 3. Sanctorius says, that the amble is the most wholesome, and the trot the least so, of all the different riding paces. This can only be the case, however, where the body is weak, for where the constitution is strong, the more forcibly the body is shaken, the better. 4. In violent exercises, particularly that of riding on horseback, much advantage will be derived, from supporting the bowels by a broad belt, the pressure of which must be regulated by circumstances †. 5. In severe weather, old people will find it necessary to ride under shelter, and at all times they ought to avoid damp and bleak places. 6. Riding is of use to those who are troubled with the gravel, at least in a slight degree, but it will not answer where there is a confirmed stone. 7. When the spirits are broken down by grief and mental disorders, and when all the pompous train of internal medicines are of no avail, riding will give an alacrity to the spirits beyond wine itself ‡.

---

* Collingnon's Inquiry into the Structure of the Human Body, p. 19.

† Turnbull's Medical Works, p. 124.

‡ See the Best Method of Preserving Health, p. 143.

3. *Gestation.*—Conveyance in carriages is of various sorts, as in a coach or close carriage, in an open carriage, or in a sedan chair. These elegant pieces of luxury have become so common, that the inhabitants of great towns seem to be in some danger of losing the use of their limbs altogether, never stirring abroad but in one or other of these vehicles*. It is a fashion to consider it beneath any one to walk, who can afford to be carried, and many sacrifice their health, to show that they have a carriage, and to gratify their vanity, in compliance with a ridiculous custom†.

Conveyance in a carriage, is an useful exercise to invalids, or persons who are on the decline, who cannot bear more violent motion; but the springs of the carriage ought not to be too nicely suspended; and at least one of the windows ought to be kept open, that the perspiration and breath of several persons, enclosed in so narrow a place, may not too much vitiate the air‡.

Riding in coaches, however, is certainly liable to some objections; it may lead, indeed, to a change of air; but, with regard to the body, the jolting of a coach, in many cases, heightens a distemper rather than alleviates it§. That the

---

* Lolling in a carriage, unless one is too weak to bear any other motion, only serves to rob one of the benefit of a more effectual, and even more pleasant exercise of the limbs. Institutes of Health, p. 22.

† Buchan's Domestic Medicine, p. 77.

‡ But we abound in absurdity and inconsistency: Thus, though it is generally agreed, that *taking the air* is a good thing, yet what caution against air! what stopping of crevices! what wrapping up in warm clothes! what shutting of doors and windows, even in the midst of summer! Many London families go out once a-day to take the air, three or four persons in a coach, one perhaps sick; these go three or four miles, or as many turns in Hyde Park, with the glasses both up, all breathing over and over again the same air they brought out of town with them in the coach, with the least change possible, and rendered worse and worse every moment; and this they call *taking the air!*—Dr Franklin's Letter to Dr Percival.

§ This observation is confirmed by an observation of Struve, who states, motion is partial, with regard to the body, may be experienced by any person who has ridden for a day in a coach: the lower limbs being often affected with a temporary palsy, to such a degree, that a person staggers, after a long drive, and is unable to walk. Many persons have suffered severely, by taking long journeys in mail coaches, and other carriages.

Using an open carriage is the most healthy fashion that has been introduced in modern times, and is, in some respects, next to riding; but in sultry weather it should not be too rapidly driven, for though it is pleasant, on account of the agreeable current of the air, yet it is dangerous to persons subject to violent perspiration. There is reason to believe, that, by the use of open carriages, people of rank will, in time, become much healthier, and more hardy, than formerly.

Driving carriages is certainly an active and healthy exercise, but unless a person is taught young, he generally does it in a very awkward manner, and it rather requires more time, than can well be spared for the acquisition of such an accomplishment.

In regard to exercise in sedan chairs, it is certainly calculated for the weak and delicate, and to those who are deprived of the use of their limbs, but it cannot be of any general utility.

4. *Sailing*.—There are few exercises which, in a maritime country, deserve more attention and inquiry than sailing, more especially as it furnishes so effectual a cure for various disorders*. It is of a compound nature, and on that account,

---

states, that he has seen the condition of consumptive patients rendered so much worse by gestation, that the fever was considerably increased thereby.—Struve's Asthenology, sect. 483.

* Sailing is a passive exercise, well suited to a state of disease, especially

account, possesses advantages to which no other exercise can lay claim. The following may, in particular, be enumerated: 1. A person is carried very quickly, and blown about by the winds, which are often adverse, by means of which, the pressure and action of the air is much increased. 2. This exercise, contrary to every other one, which are only taken at intervals, *is constant*, for the ship is perpetually in motion, and the body is continually under its power. 3. The volutory and tossing motion of the ship, is a great addition to the exercise, as thereby one set or other of the muscles, throughout the whole body, is constantly and alternately kept in action, in order to preserve the equilibrium. 4. One is constantly breathing an air peculiarly salutary; and as the air suffers a constant undulatory motion, corresponding to the motion of the sea, it renders the air we breathe peculiarly efficacious. 5. The sickness and vomiting, which often accompany sailing, is in the highest degree salutary. It cleanses the first passages of bad humours, which, if retained, might vitiate the chyle, and render the blood impure and disordered. It also restores the tone of the stomach, and of its appendages; and is a sure remedy in many diseases, which have their seat in, and depend on, the distempered state of the alimentary tube. Its beneficial effects on the stomach are soon perceived by the appetite which it in general gives, and even the costiveness which it occasions. 6. Sailing unites the advantages *of walking*, or the gentle and constant action of the muscles, with which that exercise is accompanied; and *of riding*, or the continued suc-

cussion

---

ly where the stomach and lungs are affected. It produces, at first, much sickness and nausea, and occasions the stomach and adjacent organs to be completely unloaded: bilious complaints, therefore, are removed by it; and by its producing an increased discharge by the skin, it is no less useful in consumption and spitting of blood, by thus lessening the determination to the lungs.—Turnbull's Medical Works, p. 12.

cussion which it occasions; and furnishes the same advantage, of being carried about with considerable quickness through the air. 7. Though accompanied with all these advantages, yet it is not a severe exercise, nor is it attended with lassitude or loss of spirits, as other exercises often are: other exercises, indeed, cannot be undertaken by those who are weak and wasted, without great precautions; but sailing, though of mighty energy, yet is safe; and except the sickness which it at first occasions, it is easily sustained. There is hardly any stage of a disease, in which the use of it ought to be prohibited, if the frame of the body or mind is not too much broken, or some part corrupted; even in this last case it is sometimes highly proper *.

Sailing, however, is not without its disadvantages. It is certainly of use to the weak, provided the motion of the vessel be steady and even, and the sea not rough, nor the wind too high; but to be tossed about in a stormy sea, affects the strongest constitution, if not accustomed to it, and occasions giddiness, vomiting, intolerable anxiety, fainting, and terror †; and, on these accounts, cannot, in every case, be recommended.

5. *Bowling.*—This exercise may be traced in England as far back as the thirteenth century, but is probably of a more ancient date. Bowling-greens are said to have originated in England, and were to be found in most country towns of any note; indeed country mansions were formerly not reckoned complete without them ‡. It is an unfortunate

---

* Gilchrist on the Use of Sea Voyages in Medicine, p. 13—17.

† See the best Method of Preserving Health, p. 143.

‡ Strutt's Plays and Pastimes, p. 199. In towns, open greens for bowling being exceptionable, from the difficulty of excluding improper company, and from their being exposed to the inclemency of the weather, covered bowling alleys were invented; but they were abolished, as promoting a pernicious spirit of gambling.

circumstance that this mode of exercise is so much given up, as it is both healthy and amusing; and being taken in the open air, was infinitely preferable to any domestic exercise.

Domestic healthful Exercises.

1. *Billiards.*—Domestic exercises ought only to be engaged in when the season is unfavourable; exercise in the open air being much more beneficial. At the same time, when the weather will not permit going abroad, they may be followed with some advantage, and are certainly to be preferred to mere idleness, or sitting from morning till night staring at the fire *. Of these, the game of billiards is in in general a peculiar favourite. The invention of this game is attributed to the French. It is an elegant species of amusement, admits of great variety, and requires a great deal of skill to be thoroughly master of it; it is also attended with a moderate degree of exercise; but it deserves little to be encouraged on one account, that it is very apt to promote a gambling spirit among those who are addicted to it.

2. *The Shuttle-cock.*—This is a sport of some standing, and is represented in a manuscript as far back as the fourteenth century. It afterwards became a fashionable pastime among grown persons in the reign of James I.† In a medical point of view, this exercise is peculiarly beneficial, to such invalids as have sufficient strength to undergo it; as by the various exertions of the muscles of the limbs, and of the trunk of the body, and the alternate compression and relaxation

---

* Cheyne's Essays on Health and Long Life, p. 95: and Burton on th Non-naturals, p. 258.

† Strutt's Sports and Pastimes, p. 227.

relaxation of the blood-vessels, and secretory organs, the circulation is promoted, the excretions, especially perspiration, are increased, the relaxed fibres strengthened, and the nervous system invigorated *.

3. *Swing-Leads*, or *Dumb-Bells*.—A quantity of lead is sometimes formed into a shape, by which it can be grasped by the hands, for the purpose of being swung about. Articles of that sort, are known under the name of *swing-leads*, or *dumb-bells*. They are mentioned as a mode of exercise, by an author who wrote in the time of Queen Elizabeth; and a pastime, of nature somewhat similar, is recommended, in one of the numbers of the Spectator, as excellent for opening the chest, exercising the limbs, and giving a man all the pleasure of boxing without the blows †. As commonly used, dumb-bells are certainly a partial exercise; but by frequent altering the posture of the body, and taking the exercise with open windows, it is found highly beneficial.

---

* Adair's Medical Cautions, p. 409. However trifling this exercise may appear to some people, yet, with the exception that it is not performed in the open air, there is hardly any that ought to be accounted superior to it. It has this advantage, that it may be used at all times, and in any room eighteen feet long; the height is not material, because good players never play high; and with a little practice, indifferent ones will be able to do the same. I have the more pleasure in recommending this exercise, as it is so well calculated for women, who cannot, with propriety, at all times, use so much labour as is necessary to keep them healthy. With the advantages of its being a social diversion, it most agreeably exercises the whole human frame, by the various attitudes the players are perpetually putting themselves in; of course, it creates a graceful pliancy in the joints and muscles, accelerates the circulation of the blood, and propels, to the cutaneous pores, all the fluids prepared by nature to pass off by this easy and salutary way; it also promotes the concoctive powers; and, if used before dinner, will admit of a considerable share of exertion, without any danger, if care is taken not to drink any thing cold at the time, or imprudently expose the body to a cold air. Smith's Letter to Dr Cadogan, p. 64.

† Strutt's Sports and Pastimes, p. 60.

4. *The Lead exercise.*—The late Dr Adair has strongly recommended what he calls '*the lead exercise.*' It is performed in the following manner.—Procure two pieces of lead, from between half a pound to a pound weight each, according to the strength of the arms, either in the form of a bullet, or oblong, like a rolling-pin. If the lead is uncomfortably cold it may be covered with cloth. When used, the person is to stand upright, with his toes a little turned out; raise the leads nearly close to each other, opposite to the pit of the stomach, bending the knees at the same time; then thrust the arms down smartly, as far as they will go without stooping, and straighten the knees at the same instant, and thus continue these opposite motions, alternately, and quickly, until the arms feel slightly fatigued, and repeat it three or four times a-day, especially before breakfast, dinner, and going to bed *.

5. *Suspended beds.*—The celebrated Asclepiades, by a number of new improvements in medicine, if he did not effectuate more cures than other physicians, at least kept up the hopes and spirits of his patients, and rendered their situation more comfortable. Among his other inventions, none was more approved of at the time than the *lecti pensiles*, or suspended beds, by means of which, the patient might be moved to and fro, so as to give him some kind of exer-

---

* See Adair's Essay on Diet and Regimen, p. 64. The doctor has expatiated at great length on the advantages of this exercise; and it seems to be rather an improvement on swing-leads or dumb-bells. Such domestic mean of exercise, always ready at hand, must be of service to those, who, from the pressure of business, cannot go abroad to take the necessary exercise out of doors; also to sedentary people, who will not take the trouble of dressing; and to valetudinarians, who can take a little, but not severe exercises. This plan they can follow to any extent that they may find advisable.

cise[*]; or, if it were necessary, he might he rocked to sleep. These sorts of beds became so fashionable at that time, that they were made even of silver, and became a very important article of the furniture of the luxurious.

6. *Exercising the voice.*—Speaking is one of the most useful sorts of exercise. It is particularly salutary to the female sex, who are more confined at home then men[†]. Loud reading and speaking, are also of singular advantage to literary men, affording them good substitutes for other kinds of exercise, for which they seldom have sufficient leisure or opportunities. It is to this cause, that we may justly ascribe the longevity of many school-masters, and teachers in universities, who, notwithstanding their sedentary employments, and the vitiated air they daily breathe in school-rooms, attain a long and healthy life. Speaking loud, however, when carried to excess, is prejudicial; and to exercise the voice, or to speak very loud, immediately after a meal, is injurious to the lungs, as well as to the organs of digestion[‡].

As reading aloud, and declaiming, are of such importance, (and perhaps, in some cases, they might prevent consumptions)[§], it is much to be regretted that we scarcely find one person in ten, who has a regular, just, and pleasing enunciation; indeed, perhaps not one in a thousand. Stammering, lisping, speaking thick, pausing to take breath at improper places, inability of pronouncing certain letters, drawling, singing, speaking in a key different from that which is natural to the speaker's voice, &c. are all defects which are but too common. Owing to this, there are but few who can boast of a voice loud enough for a large assembly.

---

[*] Grieve's Celsus, Book II. cap. 15, p. 88.

[†] Dr Andry observes, that singing, and speaking loud, are most healthful exercises; and one reason why women require less bodily exercise than men, is, that they are often more loquacious.—See Mackenzie's History of Health, p. 380, note.

[‡] Reading aloud is strongly recommended by Celsus, more especially to those who have weak stomachs, Book I. cap. 2. and it cannot be too strongly enforced, that reading aloud, singing, and exercising the voice, contribute much to influence the state of the digestive organs, as well as of the lungs; and when other exercises cannot be used, they form an useful substitute.—Turnbull's Medical Works, p. 123.

[§] It is certain that loud speaking, without over-straining the voice, will

The only remedy for these defects is, reading aloud, and declaiming, either in the house, or, what is much better, in the open air. It is by these means that the organs of speech are rendered more perfect, and the lungs strengthened. This is of material service to the health of even private individuals; but it is absolutely essential for those who have to declaim in public, either in the pulpit, at the bar, or in the senate-house *.

Singing is another mode of exercising the voice, which, in moderation, may be attended with beneficial consequences, or at least may be useful to that important organ the lungs; and is also to be recommended on account of its enlivening effects upon the mind. Those sedentary artificers or mechanics, therefore, who, from habit, almost always sing at their work, unintentionally contribute much to the preservation of their health †. The ancient Highlanders had songs, adapted for all the different sorts of labour

---

will both strengthen it and the lungs. Many imagined that Master Betty, or the Young Roscius, as he was sometimes called, would have been thrown into a consumption by his theatrical exertions; whereas, on the contrary, his lungs were strengthened by it, and his health on the whole improved.

* Salzmann's Gymnastics for Youth, p. 367.

† Willich's Lectures on Diet and Regimen, p. 459.

bour they went through, as rowing, reaping, &c. which greatly diminished the fatigue of these exertions. It is to be regretted that these salutary customs are now falling into disuse.

But though singing, in moderation, may be permitted, yet the exercise given to the lungs by wind-instruments, cannot possibly be recommended to young people, more especially if they have any consumptive tendency. The exertions which such instruments occasion, are too powerful to be wholesome, and must hurry too much the circulation of the lungs.

7. *Friction.*—There is no subject, to which it is more necessary to call the attention of every individual, desirous of preserving health, or attaining longevity, than to the advantages of *friction;* the importance of which is but little known in modern times, compared to what it ought to be. The ancients, on the other hand, placed such a high value upon it, both for the preservation of health, and the cure of disease, that a man hardly passed a day without it. Horse-dealers know well the advantages arising from friction, for they never suffer a horse to stand in the stable for a few days, without dressing, rubbing, currying, &c. and surely the same exercise cannot but be highly serviceable to the human body *. How many are there, who keep a number of grooms, to curry their horses, *who would add ten years to their own comfortable existence*, if they would employ but one of them, to curry themselves with a flesh brush, night and morning?

---

* Valangin on Diet, p. 217. Almost every body knows, what well currying will do to horses, in making them sleek and gay, lively and active; even so much, as to be worth half the feeding. This it can no otherwise effectuate, than by assisting nature to throw off by perspiration, the recrements, or grosser parts of the juices, which stop the full and free circulation. Cheyne's Essay on Health, p. 104.

In considering this most interesting branch of the present inquiry, I propose more particularly to direct the reader's attention to the following general heads: 1. To the various modes of applying friction. 2. To the time when it should be applied. 3. To the advantages of using it. 4. To the application of unction with it; and, 5. To some miscellaneous particulars.

1. There are various modes of applying friction to the body, as, by the hand—with flannel or coarse linen—with a flesh-brush—with a sponge—and with aromatics, or embrocations.

Friction with the hand, is called *champuing* in the East Indies. The daily use of it is there considered as indispensable. By this salutary expedient, they find that a person receives nearly as much benefit as from a tepid bath. In hot countries, where sufficient exercise cannot be taken in the open air, this sort of exercise cannot be too much recommended *.

Instead of the naked hand, some employ a piece of coarse flannel, or linen, or flannel gloves, on the idea, that in this way the flesh is compressed more than with the flesh-brush, by which, indeed, the surface of the body is principally affected.

---

* It is owing to the heat of the climate, that champuing, or friction, is so necessary in the East Indies. Dr Cadogan, therefore, in his Dissertation on the Gout, p. 88. (note), does not give a just representation of this mode of exercise. He says, that the Asiatics, understanding luxury much better than we do, and knowing that it is not to be had without some degree of delicate health, do just enough to keep them, in this languid, effeminate state, free from pain. Those who are rich among them, employ people called *champuers*, to rub, chafe, and pat them all over, at least twice a day, to move their blood, and keep their vessels free, without any labour or exertion of their own powers. This daily practice, in hot countries, where they live in the most slothful indolence, is not only necessary to them, but a great luxury. The Greeks and Romans too, when they become luxurious, fell into habits of this kind, and were strigilled, and curried, and bathed, and oiled, almost every day.

The flesh-brush, however, I consider, on the whole, to be by far the best mode of applying friction, unless where the assistance of aromatics or embrocations is necessary; for it may be had of any sort of hardness, according to the nature of the case for which it is intended; it moderately compresses the muscles, clears the skin effectually, and excites a pleasing glow.

In regard to the sponge, it is alone useful from its power of absorbing water, and consequently is calculated for cases where the application of cold water, in addition to moderate friction, is recommended. But by immersing a flesh-brush in water, the same effect may be obtained; and the advantages of the flesh-brush, and the warmth and circulation which it occasions, may be obtained at the same time.

As to aromatics, or embrocations, these are certainly best applied, by means of coarse and warm woollen cloth or gloves, which may either be impregnated with the smoke of burning amber or mastic, (by the steam of which the relaxed parts of the body are strengthened), or with such embrocations, as may be recommended by medical men, according to the nature of each particular case.

2. In regard to the time when friction should be made use of, it must depend upon various circumstances; but in general, it is best applied, either in the morning or at night. In the morning, there is a great deal of acrid matter about the pores of the skin, sufficiently prepared to be perspired, and which waits for nothing but exercise to be thrown out. In that case, friction in the morning must be of great use *.

When

---

* Burton on the Non-naturals, p. 280. Frictions in the morning are of use, not only to promote perspiration, but to invigorate and harden the

When the stomach is disordered, or incapable of performing its functions, rubbing the belly with a brush, or with flannel, is of great use. Friction, thus applied, for half an hour every morning, (and for the same space at night, if it should be necessary), will invigorate the stomach, and organs therewith connected, more than moderate exercise for a whole day. But for obtaining such beneficial effects, it must be performed on an empty stomach, or in bed, before we rise, gently and steadily, in a circular direction, and at least for five or ten minutes at a time. Some recommend, that the friction should be accompanied with the application of cold water, or washing the belly with it in the morning, by means of which, it is said, not only occasional obstructions, but habitual costiveness may be removed.

Friction is also of great use at night, as its effects are favoured by the after retirement to bed, where a free perspiration of the parts is apt to ensue *.

3. Frictions will certainly be found highly useful in promoting the growth and activity of children, in preventing any

---

the head, and other parts of the body. It is recorded of a Scotch clergyman, that he preserved his health to a very advanced period of life, much owing to a custom of bathing his head in cold water, from a rivulet that ran below his garden; and this he practised in winter as well as summer, breaking the ice if necessary; and persevered in it for about forty-five years. Code of Longevity, Vol. II. App. p. 58, 59, 60. For some time past, I have followed a similar plan, and found it extremely beneficial. Every morning, I immerse a flesh-brush in a bason of water, and in this manner bathe the head. The flesh-brush absorbs as much water as makes a plentiful ablution, and the effect of the cold water, is much improved, by the friction of the flesh-brush afterwards. There is no practice so likely to be useful to those who are apt to catch cold, or are troubled with head-achs; and if they once begin it, they may, like the worthy clergyman, be able to continue it for forty years. It is only calculated, however, for those who wear wigs, or whose natural hair is very much cropped indeed.

* Turnbull's Medical Works, p. 125.

any obstructions to which they are liable, and above all, may be considered as an effectual remedy for the rickets, more especially if cold bathing be used at the same time. In all diseases of the skin, it is highly serviceable; and many instances can be adduced, where, by the assiduous use of friction, the skin has been totally changed from a habitual, rough, scabrous, and pimpled appearance, and has become smooth and mellow, accompanied with a general amelioration of health *.

The advantages of friction to gouty persons, is ably described by Cadogan. He observes, that when a person is unable to walk or ride at all, he must, by degrees, be brought to do both, *by means of friction.* For that purpose, a handy active servant or two must be employed to rub him all over, as he lies in bed, with flannels, or flannel gloves, fumigated with gums and spices, which will contribute greatly to brace and strengthen his nerves and fibres, and move his blood, without any fatigue to himself. This may take up from five to ten minutes at first. If he is totally unable to help himself, this must be repeated five or six times a day. He must endeavour, at the same time, gradually to get strength to walk and ride, till he be able to walk two or three miles at a stretch, or to ride ten without being weary †.

---

* Buchan's Practical Observations concerning Sea-bathing, p. 38.

† See Cadogan's Dissertation on the Gout, p. 86. This may seem but a trifling prescription to those who have never tried it sufficiently; but is of the utmost consequence, and its effects are amazing; especially to all those who are too weak to use any muscular motion themselves. A little friction may have little or no effect; but if long continued, and repeated often, with fumigated flannels, it will do more to recover health, and support it afterwards, than most other things or methods. It promotes circulation and perspiration, opens the pores, forces the fine vessels, strains and purifies the blood, and this without the assistance of any internal

Frictions are also of great use in various other cases, as in rheumatisms, paralytic affections, green-sickness; and above all, either in emaciation, on the one hand, or corpulency on the other. The ancients, it would appear, had the art of rendering fat people lean, and those that were too lean fleshy, partly by means of active exercises in general, but more especially by frictions [*]. Galen, in particular, is said, in the space of a few days, to have restored the flesh of many who had been emaciated, by means of friction with fat substances. It is reported, on respectable authority, that a child having one of his legs strong and lusty, and the other much emaciated, frequent friction with flannels, held in the fumes of myrrh and benjamin, rendered his emaciated leg as strong and lusty as the other [†].

Lord Bacon, with his usual sagacity, has explained how frictions tend so much to promote plumpness. He says, that the outward parts of the body are thus heated and comforted, thence do more readily call forth nourishment to themselves [‡].

Fricton is peculiarly calculated for aged people, for those who have weak nerves, who lead a sedentary life, who are subjected to a weakness in their joints, or who are threatened with paralytic disorders. They are thus enabled to supply the want of exercise of other kinds, provided their whole bodies,

---

ternal stimulation. It is this that keeps horses in tolerable health, with very little exercise.

[*] Salzmann's Gymnastics for Youth, p. 169.

[†] Burton on the Non-naturals, p. 280. Another child, about five years of age, who could not stand, and whose back was so weak that it was quite bent, by using friction all over his body, more especially on the back-bone, and with the assistance of cold bathing, was quite recovered.

[‡] See the Code of Longevity, Vol. IV. p. 203.

bodies, more particularly their limbs, are rubbed for half an hour, morning and evening, with a flesh-brush, flannel, or napkin, till the parts begin to grow red and warm. The friction should begin with the arms, hands, feet, legs, and thighs; and thence ought to proceed to the shoulders, back, and breast; the head should be rubbed last of all. The effects of this practice, when used with care and constancy, is more than can be imagined; and though it cannot be attended with all the advantages enjoyed by exercise in the open air, yet it is the best substitute for more active exertions that can possibly be suggested.

The use of the flesh-brush should never be omitted during a course of sea-bathing, especially if undertaken for the purpose of restoring lost health. The glow which should succeed the cold immersion, must necessarily be considerably promoted by the active state of the cutaneous vessels, produced by daily and regular friction *.

4. Bacon strongly recommended, that the skin should be lightly anointed with oil, after friction, least the outward parts should become dry and juiceless by perspiration; and, in vehement exercises, he recommends unction to be used, both in the beginning and at the end, as was anciently practised to champions.

In regard to the external application of oil to the human body, the best treatise that has hitherto appeared upon that subject,

---

* See Buchan on Sea-bathing, p. 38. It is proper also to observe, that when there is any defect in perspiration, which may occasion colds, head-achs, and complaints in the stomach, &c. instead of attempting any evacuation by purgatives, the best mode is, to endeavour to increase the quantity of insensible perspiration by friction. Many swellings or tumours are thus reduced; and I question much, whether pimples in the face might not be removed in the same way. A stye in the eye is removed by rubbing it with a smooth bit of gold; but it is the friction, and not the gold that effects the cure.

subject, is written by Mr William Hunter, a surgeon in the service of the East India Company; it is drawn up, indeed, with uncommon distinctness and ability, and with every appearance of deep research. The following are the general results which he deduces from his inquiries, 1. That the application of oils, and other unctuous substances, to the skin, serves to guard the body against the inclemency of the weather, particularly cold and moisture. 2. That it may prevent too profuse perspiration in hot weather, which is one cause of debility; and, 3. That, in dropsical complaints, the application of oil is useful, more especially when joined to brisk, and long-continued friction. As it does not prevent the giving of proper medicines by the mouth, at the same time it may be considered, in this disease, as a powerful auxiliary *.

---

* See Hunter's Essay on the Diseases incident to Indian Seamen, one volume folio, printed at Calcutta, anno 1804, p. 158, App. NO. 14. Mr Hunter also takes notice of three other questions, regarding the use of oil; 1. Whether it is a protection from contagion. 2. Whether it is worthy of trial in the incipient stage of plague; and, 3. Whether nourishment may thus be conveyed. In regard to the last point, it is evident, from the preceding observations in the text, that anointing, combined with friction, has a fattening tendency. Another ingenious author, on the external application of oil, remarks, that among the ancients the practice of anointing the surface of the body with odoriferous oil, was generally associated with the use of the bath. Lord Bacon, in his History of Life and Death, regrets the disuse of this custom, and thinks the revival of it would be conducive to the preservation of health, and the prolongation of life, by preventing what he terms the predatory effects of the external air upon the spirits. By this expression, he probably means, regulating perspiration within due bounds. In what particular cases this practice would be found most salutary, the experience of modern times is perhaps not sufficient to decide. The external use of oil has lately been affirmed to have cured the plague. From the copious sweats that follow its use in that disease, we may conclude, that it does not impede the cutaneous discharge. To swimmers, who are desirous of remaining long in the water, it may be of use, by lubricating the surface of the body, to enable them to glide more swiftly through the liquid element. From vari-

5. The following miscellaneous observations, on the subject of friction, remain to be taken notice of.

Celsus, with some indignation, refutes the claims of Asclepiades, who pretended to be the inventor of friction. He certainly improved the practices connected with it, though its general advantages were comprized in a few words by Hippocrates, who said, ‘ that friction, if violent, hardens the body; if gentle, softens it; if plentiful, it extenuates; and, if moderate, increases its bulk *.

One of the principal advantages of friction is, that it renders the use of flannel, in many cases, unnecessary. This I can assert upon my own experience. Having been very subject to sore throats, I was accustomed to wear flannel about my neck, hoping to prevent them by its warmth. But I am convinced, that the mischief was rather increased than diminished by that practice. The idea of trying the flesh-brush, originated from a perusal of the works of Celsus. It occurred to me in the winter season, and even in the midst of snow; yet with the aid of the flesh-brush, I threw off the flannel coverings of the throat, without suffering in the least from the change, and have never since had any occasion for them; and for several years have never had any tendency to a sore throat, except once, when I had neglected the use of the flesh-brush for some time. If the weather is cold or damp, I think it right to use the flesh-brush before I go out,

---

ous experiments, it is ascertained, that oil may be applied over the whole surface of the body, at all seasons of the year, without danger. It appears to increase the general warmth of the system, and might probably be found useful in obviating the disagreeable effects of easterly winds on delicate constitutions, by preventing the too quick evaporation of moisture from the surface of the body.

* See Grieve's Celsus, Book II. Cap. 14. p. 85.

out, and again when I return, to restore the circulation. By the same means, I have no doubt the use of flannel shirts and waistcoats may be rendered unnecessary *.

The flesh-brush, if used about the throat, is of great service in strengthening the organs about the tongue, and preventing hesitation in speaking. If also used behind the ear, I am convinced it will, in a great measure, prevent deafness, the wax in the ear being apt to accumulate as age advances, owing to defective perspiration. The proper application of friction also to the gums, by brushes, which should be called *gum*, and not *tooth* brushes, I am persuaded would preserve the teeth, and prevent the toothach †. In short, the advantages that may be derived from friction, are inestimable.

On the whole, it evidently appears, that the practice of friction is not sufficiently understood or attended to in modern times. It would certainly tend much, therefore, to the improvement of medicine, if all that is recorded upon this subject were collected, and thoroughly digested, and if experiments were afterwards tried, to ascertain the effects of the different rules therein laid down ‡.

---

* Dr Buchan junior, in his useful Treatise on Sea-bathing, p. 38, observes, that the occasional excitement of the cutaneous surface, by means of the flesh-brush, differs widely from the perpetual irritation of flannel. Besides, the use of friction requires a temporary exposure of the body to the open air, which, while all danger of taking cold is prevented, by the increased exertion, accustoms the system to occasional changes of external temperature, the usefulness of which does not require to be dwelt upon.

† The less the teeth, and the more the gums are rubbed the better. The gum-brushes should be large. Soft ones may at first be used, but the harder are more effectual.

‡ On the subject of friction, Strother's Essay on Health, and Fuller's Medicina Gymnastica, p. 197, may also be consulted.

8. *Electricity.*—This is a kind of passive exercise, which exceeds every method hitherto known, for exciting the quickest and most powerful motion, in various parts of the body. When the electric force is applied with proper caution and judgment, it may be of infinite service; and it is probable, that much may be done with it, in the cure of disease; in particular, that the extremes of relaxation and constriction, in animal fibres, may often be remedied by it.

9. *Galvanism.*—The discovery of animal electricity, by the celebrated Galvani, has pointed out another mode of exercising the muscles of the body, which may yet be found of important advantage in the cure of disease; but hitherto the expectations which were formed from it, have been disappointed.

SECT. II.

The advantages of Exercise, in preventing or curing Disease.

THE general uses of bodily labour and exercise, and the various sorts thereof, having been already explained, it may next be proper to consider the advantages of exercise, 1. In preventing disease. 2. In curing disease, and restoring health, without the assistance of medicine; and, 3. In facilitating a cure when medicines are necessary.

1. *Exercise prevents Disease.*

It has been justly observed, that if only some of the many advantages resulting from exercise, were to be procured by any one medicine, nothing in the world would be in more esteem, or more anxiously sought after; but that we are too apt to slight the advantages which are to be procured by other means than medicine, when they cannot be obtained without trouble *. Hence exercise is neglected, though, by attending to it, the greater part of those disorders to which mankind in general fall a sacrifice, might, in a great measure, be prevented.

There was a time, we are told, when diseases were little known, when age was the only infirmity, and death the sole physician. That could only be the case, when men, 1. By labour or abundant exercise, promoted a regular and complete circulation of their blood. 2. By great exertion freed their bodies from impurities; and, 3. By constant exposure to the open air, were hardened against the changes of the seasons, and suffered no inconvenience from them.

By such means as these, we might consider ourselves completely secured against three fourths of the usual catalogue of diseases.

1. The necessity of labour or exercise, to promote the regular and complete circulation of the blood, is evident from this circumstance, that the strength of the heart and arteries alone, in a sedentary course of life, is by no means sufficient to keep up and perpetuate, with sufficient efficacy, that circulation throughout the smaller blood-vessels. The assistance and joint force of all the muscles of the body, acting at proper intervals, are essential for that purpose. Without this extraordinary occasional aid, which can only be effected by labour or exercise, the smaller vessels are, in process of time, closed up; whence numberless evils of the chronic kind, and every species of nervous disorders,

---

* See Fuller's Medicina Gymnastica, Preface.

disorders, take their origin. Persons who have lived for any time without adequate labour or exercise, grow pale and emaciated; or, if they have a good appetite, become bloated, corpulent, and loaded with unwholesome fat; but, notwithstanding their apparent bulk, have much less blood in their veins than thinner people *.

When such is the state of the body, it is impossible to expect relief from medicine. The cordials, volatiles, bracers, strengtheners, given by common practitioners, will keep up an increased circulation for a few hours; but their action soon subsides, the stimulus ceases, and they must be repeated and re-repeated during life. *The circulation of the blood, indeed, can only be properly carried on, through the medium of exercise or labour.* No art can ever come up to nature, in this most salutary of all her operations. That sprightly vigour and alacrity of health, which we feel and enjoy in an active course of life, that zest in appetite, and refreshment after eating, which sated luxury seeks in vain from art, is owing wholly to new blood, made every day from fresh food, prepared and distributed by the joint action of all the parts of the body[*].

---

* Cadogan's Dissertation on the Gout, p. 28.—The principal source of our well-being arises from the circulation of our fluids, especially the blood. A brisk circulation animates the whole man. Even the phlegmatic is exhilarated when any thing sets his blood in commotion; and when this takes place in an immoderate degree, the man is agitated even to delirium. These effects are well known. Continued rest weakens the circulation, till at length the blood feebly creeps through its vessels; for the heart is not of itself sufficient to give it due motion: for this, muscular movement is likewise requisite. But rest of body relaxes the muscles, diminishes the vital heat, checks perspiration, injures digestion, sickens the whole frame, and thus numberless diseases are introduced. There is not a single part of the human machine, which a sedentary mode of life does not debilitate, and the nerves more especially suffer by it. Generally speaking, says Ackermann, a sedentary life is the source of all those diseases which physicians call cachectic, the number of which is considerable. Among them are green-sickness, jaundice, atrophy, worms, titter, obstruction of the natural excretions, dropsy, &c.; for these, exercise is the best remedy; it strengthens the vessels, says Tissot, preserves the fluids in a healthy state, quickens the appetite, facilitates the excretions, invigorates the spirits, and excites pleasing sensations throughout the whole system.—Salzmann's Gymnastics for Youth, p. 69.

2. Not only must the blood be duly circulated, but it must be cleared from impurities; and that will be effected by labour or exercise, under a coarse, and even an unwholesome regimen. The culinary arts certainly were not of old cultivated so much in England as at present; but, on the whole, the old English were very intemperate livers. They ate great quantities of dried, salted, and fresh meat, not only for dinner and supper, but likewise at breakfast: they also drank amazing quantities of strong ale and stale beer, liquors fully as pernicious as wine of any sort; and what must they not have suffered from such a mode of life, if they had secluded themselves, as much as we do, from the ambient air, and had neglected as much taking proper exercise? But there were then no carriages hung on easy springs, rolling on turnpike roads; no rooms covered with warm luxurious carpets[†]; and, in many cases, no sash windows to exclude the salutary air from entering. In those days, if a man or woman was obliged to go a little way, it was on foot; if to a greater distance, it was on horseback; and in both cases there was abundant exercise taken in the open air. The use of the bow and arrow, and the art of wielding the broad sword, and other violent and healthy exercises, were then necessary accomplishments

---

[*] Cadogan's Dissertation on the Gout, p. 34.

[†] The rooms, even of people of fashion, were then paved with brick, or stone, or marble.

ments for every person that ranked as a gentleman. *By these airy and masculine exercises, the digestive powers were strengthened, and those acrid humours were dissipated by perspiration, which, when retained in the blood, occasion the gout, and various other disorders* *.

3. There are no means by which health can be more effectually secured, than by accustoming the body to be duly exercised in the open air, and exposed to all the changes of the atmosphere. As it is by means of the air which we breathe that life is supported, it is of great consequence that we should be, as much as possible, surrounded by that element in a state of purity. The more we are abroad, therefore, the better for our health, and our comfortable existence. But being without doors, without being in motion, does not answer half the purposes that we ought to have in view; as we ought not only to imbibe salutary particles, but to expel noxious ones.

The advantages, therefore, of air and exercise united, cannot be too highly appreciated. The inactive may be compared to rusty machines, which are soon corroded and destroyed; whereas, those who are active, though they must also ultimately perish, yet they are always bright and polished, and constantly fit to execute any purpose for which they were destined.

It has been observed, that what are called *liver complaints*, and other glandular obstructions, are much more frequent now than formerly. This is altogether owing to inactivity; and nothing but exercise can prevent them. So long as the liver, the kidneys, and other glands of the body, duly perform their respective functions, health is seldom impaired; but when they fail, nothing can restore it. Amongst

---

* Smith's Letter to Dr Cadogan, p. 65.

mongst those who take sufficient exercise, glandular diseases are very little known; whereas the indolent and inactive are seldom free from them[*].

Not only is the necessity of exercise in general to be enforced, but particular exercises are found to be admirably calculated for the prevention of particular diseases, with which individuals have a tendency to be afflicted. Indeed, there is no particular part of the body, that might not be strengthened and kept in due plight, by labour or exercise, rightly appropriated to the particular organ; and many diseases may thus be nipped in the bud, which might otherwise have ended fatally[†].

---

[*] Buchan's Domestic Medicine, p. 77. These circumstances are thus accounted for by Dr Adair. Exercise, he observes, is of great use in giving force and vigour to the glandular organs, which secret those humours so essential for the healthful state of the human body. The humours secreted in this way are, the bile by the liver, urine by the kidneys, the saliva and pancreatic juices, &c. The glands themselves have a most intricate, and complicated structure, consisting of a number of vessels, convoluted or wound up together, through which the humours, passing in a slow circuitous manner, open at length in one or more cavities, where they deposit their fluid. In these cavities, this fluid rests or stagnates, for a longer or shorter time, and undergoes various surprising changes, in colour, consistence, smell, and other properties, not easily to be accounted for, and which certainly have not been satisfactorily explained. See Adair's Natural History of the Human Body and Mind, p. 173. In regard to these secretions, Salzmann observes, that if the blood pervades the whole body when at rest, twelve times in an hour, but fifteen or sixteen times when in motion, it necessarily follows, that the quantity of secretion in the liver, spleen, brain, and other parts, where such fluids are generated, must be increased in proportion. Gymnastics for Youth, p. 158.

[†] Wallis's Art of Preventing Diseases, p. 162. See also Lynch's Guide to Health, p. 233. The lungs are fortified by loud talking, and walking up an easy ascent. The digestion and the nerves are strengthened, and most head-achs cured, by riding[*]; the stone and gravel eased, by riding in a coach over rough ground; rheumatic pains by playing at tennis, &c. till one sweat, and then going to a warm bed, to promote perspiration; feeble arms by playing at shuttlecock or tennis; weak hams by foot-ball, and weak backs by ringing or pumping. Cheyne's Essay on Health, p. 107.

[*] This alone I would not prescribe to a patient of mine.

In regard to nervous complaints, nothing but exercise and open air can brace and strengthen the nerves, or prevent the endless train of diseases, which proceed from a relaxed state of these organs. We seldom hear the active or laborious complain of nervous diseases : these are reserved for the sons of ease and affluence *.

It is particularly to be observed, that the more luxuriously any individual lives, the more he requires exercise ; and that not only of the passive, or even of the active, but also the violent kind. It is impossible that he can otherwise preserve his health, and at the same time indulge in luxurious gratifications. To persons in that description of life, the subject of exercise is of peculiar importance, and requires the most scrupulous attention. Indeed, the poor countryman has no just ground to complain of the extent of his labour, or the hardness of his fate ; for he enjoys a thousand times more real happiness than the inhabitant of the gilded palace, who rolls in luxury, and is courted in vain by every enticement to repose †.

The effect of want of bodily exercise upon the mind, is a circumstance well entitled to peculiar attention. A costive habit, so often resulting therefrom, may, as Kotzebue observes, extinguish the divine flame of genius : and it can hardly be doubted, that if the body labours under ill health, it will be incapable to obey the mind in any thing that is great and noble.

> Corpus enim male si valeat, parere nequibit
> Præceptis animi, magna et præclara jubentis ‡.

If

---

* Buchan's Domestic Medicine, p. 77.

† Turnbull's Medical Works, p. 128.

‡ Marcell. Palign. lib. 10. See also Salzmann on Gymnastic Exercises, p. 71 ; and Fuller's Medicina Gymnastica, p. 21.

If any thing can rouse an anxiety, in favour of regular exercise, and a due application thereof, it must be the effect it had on two of the most celebrated characters of ancient times, *Cicero* and *Cæsar*, who, without the advantage of a close attention to exercise, would have perished, unknown, and disregarded.

Cicero is described by Plutarch, as being, at one period of his life, extremely lean and slender, and having such a weakness in his stomach, that he could eat but little, and that not till late in the evening. He travelled to Athens, however, for the recovery of his health, *where his body was so strengthened by gymnastic exercises*, as to become firm and robust; and his voice, which had been harsh, was thoroughly formed, and rendered sweet, full, and sonorous *.

In regard to Julius Cæsar, the same author informs us, that he was originally of a slender habit of body, had a soft and white skin, was troubled with pains in his head, and subject to epilepsy; but by continual marches, coarse diet, and frequent lodging in the fields, he struggled against these diseases; and used war, and the exercises and hardships therewith connected, as the best medicine against these indispositions.

With such examples before us, who would not be animated to take that exercise, without which Cicero would never have triumphed at the bar, nor Cæsar in the field of battle: and it is absurd to imagine, that a due attention to exercise, requires too much time, and is inconsistent with elevated situations, or literary fame. By whom were greater actions performed, or works more celebrated for mental ability drawn up, than by the two distinguished characters above alluded to; and yet they were cut off at an earlier period than nature intended.

---

* See Plutarch's Life of Cicero.

2. *Exercise cures Disease, without the aid of Medicine.*

A celebrated poet, (Dryden), asserts,

> The wise, for cure, on exercise depend:
> God never made his work for man to mend.

It is impossible, however, to go quite so far in praise of exercise, though at the same time, there can be no doubt of its efficacy in several disorders; and Hoffman, in a special treatise, celebrates it as the best of medicine *.

It has been justly observed, that a skilful and honest physician, applied to by a distressed patient, will often have an opportunity of telling him, '*your cure can only be found in exercise.*' A ride, with the cheerful scenery of a new and beautiful country, will give you health, vigour, and vivacity, sound sleep, and a keen appetite; but no drugs can act upon your blood and juices, like the joint force of all the muscles of your body, acting and re-acting, as in a regular course of moderate exercise; nor can any of our draughts and potions, oxygenate your pulmonic blood, like the inspiration of the salutiferous air of the mountains †.

There are many instances recorded in ancient authors, of the great efficacy of exercise in the cure of diseases. *Plato* tells us, that *Herodicus* was cured of the hypochondriacal disease by exercise. *Pausanias* relates, that *Hysmoneus* was relieved from great weakness of nerves, by addicting himself to the five olympic exercises, and thereby acquired such a degree of vigour, as to obtain many prizes at the Olympic games; and *Plutarch* says, that *Laomedon* was so perfectly cured of an obstinate disease *by exercise*, as to excel in running [*].

---

* De Motu Corp. Opt. Med.

† Doctor Waterhouse's Lecture on Health. See Code of Longevity, Vol. IV. p. 547.

The ancients, indeed, were particularly attached to what they called *gymnastic medicine*, of which, it is said, Herodicus was the inventor, who actually opposed a particular kind of exercise to each disease [†]. Others give the credit of this system to Hippocrates.

In many branches of medicine, the ancients were certainly inferior to the moderns; but they treated diseases with great success; for they applied themselves, with extraordinary diligence, to acquire a thorough knowledge of the symptoms of diseases; *and called in the aid of corporeal exercises*, by means of which, they supplied what was wanting in other remedies [‡].

The particular diseases, in the cure of which exercise has been found the most effectual, are, 1. The gout. 2. The consumption. 3. Nervous disorders. 4. The bilious colic. 5. The dropsy. 6. The palsy. 7. Mental disorders; and, 8. Other disorders.

1. *The Gout.*—Sydenham affirms, that nothing so effectually prevents that indigestion of the humours, (which he considers to be the principal cause of the gout), and consequently strengthens so much the fluids and solids, as exercise. But as there is more necessity for making a thorough change in the constitution in the gout, than in any other

---

[*] Adair's Medical Cautions, p. 410.

[†] See Haller on the ancient authors who have written on health, Code of Longevity, Vol. II. p. 170. Plato de Republica, Lib. II. p. 622, celebrates also Ikhus of Tarentum, for his skill in gymnastic medicine.

[‡] Salzmann's Gymnastics for Youth, p. 154.

chronic disease, so exercise, unless it be used daily, will do no service, and perhaps may do mischief, by causing a fit, if resorted to, after it has been abandoned for a considerable space of time. Indeed, if exercise be omitted, all the remedies which have hitherto been discovered, will be of little avail. The exercise, however, should be moderate; because excessive exercise in aged persons, who are chiefly subject to the gout, wastes the spirits too much, and, consequently, hurts the concoctive powers, which are strengthened by a continued and gentle exercise. Sydenham considered riding on horseback as the best sort of exercise; and indeed so effectual a remedy in the gout, and other chronic diseases, that if any person, he observes, were master of so effectual a remedy, and possessed, at the same time, the means of concealing it, he might easily raise a considerable fortune. If riding on horseback cannot be used, going frequently out in a carriage, he observes, will answer almost as well [*].

2. *Consumption.*—In most chronic diseases, but especially in consumption, riding on horseback has given relief, in a manner almost incredible; and, indeed, is not only proper in slight indispositions, accompanied with a frequent cough and wasting, but, according to Sydenham, even in confirmed consumptions, wherein the looseness is succeeded by night sweats, which are the general forerunners of death, in those who perish by this disease. Hence, however desperate a consumption may, or is esteemed to be, (two-thirds of such as die of chronic diseases, being destroyed thereby), yet, there is no question, that riding is as effectual a remedy in this disorder, as *mercury* in the *lues venerea*, or the *bark* in *intermittents*, provided the pa-

---

[*] Swan's Sydenham, p. 497.

tient be careful to have his sheets well aired, and takes sufficient long journeys *. Those, however, who have passed the prime of life, must continue the use of riding much longer than those who have not yet arrived at that age. Though riding on horseback does most service in consumptive cases, yet riding in a coach also, does sometimes produce surprising effects †.

As the consumption is so fatal a disease in this country, I have thought it necessary, in addition to the authority of the great Sydenham, to take notice of various instances, from other writers, in which exercise has been found effectual in the cure of that disorder ‡.

Nor is riding the only exercise, by which a consumption may either be prevented or cured. The following proof

---

* Many modern physicians are of opinion, that Sydenham has carried these doctrines too far.

† See Swan's Sydenham, p. 445. It is remarked by Dr Swan, in a note, that riding on horseback, in the beginning of a distemper, and in young persons of a plethoric habit, sometimes proves detrimental, by occasioning frequent returns of a spitting of blood; or, where the lungs are considerably tainted, it will bring on a fatal inflammation; but in any hypochondriac consumption, or atrophy, moderate exercise, frequently repeated, is highly proper. See also Hoff. Op. Tom. III. p. 294.

‡ In addition to what Sydenham says, Fuller, in his Medicina Gymnastica, has assigned various reasons in support of the doctrine, that riding on horseback, if taken in time, is an effectual remedy for a consumption; and he quotes the instance of Dr Baynard, who, by constant riding in the open air, and more especially in the highest places, recovered from a consumption, when every body gave him over as lost. See Fuller's Medicina Gymnastica, p. 116, &c. &c. where other instances are also quoted. There is another instance mentioned, in '*The best Method of preserving Health*,' p. 139. where a patient was cured by riding, after being brought so low, that no possibility of recovery could be expected, either from medicine or even exercise. In Dr Buchan's Domestic Medicine also, p. 173. it is stated, that he knew many instances of consumptive patients, who had been sent from a populous town in England, (Sheffield), with orders *to ride about*, and to live on milk and vegetables, who returned in a few months quite plump, and free from complaint.

proof of the beneficial effects of another sort of exercise, I received from an intelligent friend, and its authenticity may be relied on.

A gentleman, whose son was troubled with pains in his left side, and who seemed to be threatened with a consumption, if it had not actually begun, thought that it might be owing to want of exercise, and prevailed on him to try *the skipping rope.* At first, he could not jump above twenty times at once, without being under the necessity of stopping, through the acuteness of the pain in his side; but by practice, he became at last able to jump with ease, 4000 times without stopping, and was perfectly cured of all tendency to a consumption. He began this exercise about twelve years of age, and continued it for about a twelvemonth, when it became no longer necessary, as his health was perfectly re-established, and he became strong and healthy *.

3. *Nervous disorders.*—Nothing can surpass the efficacy of exercise in nervous disorders. As the labouring classes of the community are seldom afflicted with them, it was natural to suppose that a resolute course of exercise would be an effectual remedy. Many have been cured by perseverance in walking. The following instance is known to the author, as a fact to be depended upon.

A gentleman who had long been afflicted with nervous complaints, for which he had taken in vain every remedy that had been prescribed to him, at last resolved to try the effects *of a long journey on foot.* The weather was unfavourable, but he was determined to persevere; and before he had travelled many days, his complaints were entirely removed.

---

* It is proper to observe, that the feet became much broader than probably otherwise they would have been, in consequence of this exercise.

moved. It is to be observed, that nervous complaints are not inconsistent with strength of body. The mind, more than the body is affected; and even where the patient feels apparently fatigued, he ought to be roused to exertion, and he will find himself much stronger than he had any conception of.

Riding on horseback for some hours every day, is another excellent mode of strengthening and cheering the spirits, and removing these complaints. This kind of exercise most affects the lower belly, which is the seat of the excretory vessels; hence there can hardly be any disorder, or natural weakness in those organs, which will not be relieved, by the frequent agitation of that part of the body on the same day. Nor can any person have the innate heat so much extinguished, as not to be roused afresh by this exercise: and if there be any preternatural substance, or vitiated juice, intimately lodged in any cavity of these parts, it cannot fail, by the use of that exercise in the open air, either to be reduced to such a state as is agreeable to nature, or entirely dissipated and expelled. By the blood being thus constantly agitated and mixed, it becomes purified and improved. In reality, though this riding does not agree so well with women, who lead so easy and sedentary a life, that they may be injured by much motion, especially in the beginning, yet for men, nothing is more proper, or sooner recovers their health *.

---

* Sydenham exemplifies these observations, by the case of a learned prelate, (Dr Seth Ward, bishop of Salisbury), who having applied himself intensely to his studies for a long time, was at length seized with a hypochondriac disorder, which, by its long standing, depraved all the ferments of the body, and destroyed the digestions. After having tried all sorts of medicines in vain, he was at last persuaded by Sydenham to try riding on horseback, beginning with short journeys, as best suited the weak condition to which he was reduced, but gradually lengthening them, as he

4. *The Bilious Colic.*—Sydenham found no remedy so effectual in this disorder, as riding on horseback, provided sufficient evacuations had been previously made, and the riding was persisted in for several days afterwards. To prevent the return of the pains which accompany this disorder, he recommends, that an opiate should be given, morning and evening. By riding on horseback, the morbific matter is brought to the habit of the body, and the blood, broken and divided by the continual motion, undergoes, as it were, a new depuration. The bowels also, are greatly strengthened and refreshed by this mode of rousing the natural heat *.

5. *The Dropsy.*—There is a species of the dropsy, of the *anasarcous* kind, for which riding on horseback is an effectual remedy. The ancients, it would appear, relied much on exercise for the cure of this complaint; and it is a system, which ought more to be attended to in modern times, than, I understand, is the case †.

6. *The Palsy.*—A person threatened with the palsy, was ordered to take a journey to Bath for a cure. In going down he thought he would try the effect of walking, having it always in his power to go into his carriage, when he was fatigued; but he derived so much benefit from the ex-

ercise,

---

he gained strength, and not to mind either meat or drink, or the weather, but to take up with such accommodations as are to be met with upon the road, like a common traveller. In short, he continued this method, till at length he rode twenty or thirty miles a day, and finding himself much mended in a few days, he was encouraged by this wonderful success, to continue this course for several months, in which space of time, he had rode many thousand miles; so that, at length, he was not only freed from his disorder, but became strong and brisk. Swan's Sydenham, p. 444.

* Swan's Sydenham, p. 191.

† This subject is very fully treated of in Fuller's Medicina Gymnastica, p. 107. and 225.

ercise, that he was cured of the disorder before he reached Bath *. At the same time, in most cases of threatened apoplexy, exercise cannot be recommended.

7. *Mental disorders.*—The celebrated Hoffmann, cured idiotism by exercise; and, according to Descartes, the mind depends so much on the constitution and state of the bodily organs, that if any means of increasing sagacity were to be found, they must necessarily be sought for in the art of medicine, accompanied by a due proportion of exercise. A well framed, and well exercised body, is precisely what facilitates and secures the proper performance of the mental functions; and a healthy organization of the bodily powers, is the best foundation for that noble endowment, known under the name of *common sense,* (however uncommon in fact it is), or a sound understanding †.

8. *Other disorders.*—A number of cures in various other disorders, have been performed by the exercise of sailing. A respectable physician has collected several cases, in which this exercise has been of the highest service, not only in the complaints already mentioned, but also in ner-

---

* See Fuller's Medicina Gymnastica, p. 382. where there are other facts regarding the cure of palsy by vigorous exercise.

† See Salzmann's Gymnastics for Youth, p. 180.—In a former part of this work, p. 78. (note), it was hinted, that genius was often owing to disease. The same observation seems to have occurred to the celebrated Hoffman. He says, that he hopes, as a physician, he will be pardoned for observing, that wit, genius, inflamed imagination, and the like, are far more frequent in modern times, *than genuine natural sense, and rectitude of judgment.* These splendid qualities *of the present day,* he thinks, ought to be considered, *not as bursts of energy,* but as serious symptoms *of a diseased and unfortunate irritability of the mind;* and he ventures to hope, that a healthier tone of mind may be expected, from the continuance of a better and more natural treatment of the physical man. See Salzmann's Gymnastics, p. 181.

vous pains in the stomach, in vapourish languor and fever, in doubtful and difficult recovery, &c.[*]

In regard to the choice of exercise for curing disease, it has been justly remarked, that there are many particulars to be attended to. Every kind of exercise, and every degree of it, is not fit for every constitution; far less in every distemper, or at all times. Which is the proper sort of exercise to be recommended, must depend upon particular circumstances of habit, age, constitution, or disease[†].

3. *Exercise facilitates a Cure, where medicine is necessary.*

Exercise is well entitled, in various respects, to be considered as *a common aid to physic*, to use a phrase which Asclepiades originally made use of. In fact, when the body is, by exercise, preserved in good health, and all the humours are wholesome, if it is attacked by disease, it is the more easily restored to health. Hence, it is well observed, that we ought undoubtedly to attribute the wonderful success of the ancient physicians, in curing diseases, with such indifferent materials as their pharmacy afforded, to the patient having his blood in general so pure, and his body so healthy, by an attention to exercise[‡].

The same observation, is also, in some respects, applicable to the natives of this country. For instance, what a material difference is there, in the form under which the gout appears at this time, and fifty years ago. Formerly, the gout usually attacked the extremities, and so violently, that many persons could then write on the table, with the chalk stones on their fingers. But the disease seldom assumes that form at present. It is now more of a general complaint, and more frequently attacks the stomach and the head. To what is this alteration to be ascribed, if it is not to a change in our mode of living? Persons afflicted with the gout, certainly lived longer at that time; because they ate plainer, kept better hours, and took more exercise than we do. They decayed therefore like the oak, at the extremities; and as the disease did not attack a vital part, it seldom proved fatal till the body was fairly worn out *.

---

[*] See Gilchrist on the Use of Sea Voyages in Medicine, p. 17, &c.

[†] Ibid. p. 12.

[‡] Fuller's Medicina Gymnastica, p. 67. A body duly exercised in the open air, if attacked by any toil or sickness, is not soon affected by it, or easily subdued, the inward parts being all sound, and in good condition, and the outward so well fortified against external attacks, as not easily to receive any injury from the attacks either of cold or heat. See Lucian's Dialogue of Gymnastic Exercises, translated in West's Dissertation, p. 171.

It is to be observed, that exercise is to physic, what a bandage is to surgery, an assistance or medium, without which, many other prescriptions, though ever so excellent, will not succeed. The virtue of some medicines is increased by means of exercise; while, in others, exercise is only necessary to remove some inconvenience attending their operation, which is often so great as to deter people from using them so liberally as they ought to do †. Thus, medicines of a balsamic and chalybeate nature, are not likely to answer the purposes for which they were intended, unless they are accompanied with exercise; and if exercise is omitted in the case of gouty patients, all the

other

---

* I am indebted for these observations, to my intelligent friend and correspondent, the Reverend Dr George Gregory, who adds, that his mother's maternal grandfather, Mr Henry Brown, a member of the council at Liverpool, was able thus to write upon the table with his chalk stones.

† Fuller's Medicina Gymnastica, p. 58.

other remedies which have hitherto been discovered, will be of little avail [*].

It is farther to be remarked, that by means of the invigorating quality of exercise, the efficacy of medicine is increased, by extending its powers to every part of the system, and at length promoting its discharge when it is no longer useful [†].

I shall conclude this part of the subject, with the advice of an elegant poet, which cannot be too strongly recommended to the attention of every individual, to whom health is an object.

> 'Toil, and be strong. By toil the flaccid nerves
> Grow firm, and gain a more compacted tone;
> The greener juices are by toil subdu'd,
> Mellow'd, and subtiliz'd; the vapid old
> Expell'd, *and all the rancour of the blood* [‡].'

SECT. III.

General Rules regarding Exercise.

THE rules with regard to exercise, may be classed under the following general heads, 1. Time. 2. Place. 3. Quantity. 4. Age. 5. Sickness; and, 6. Miscellaneous remarks.

1. *Time.*—Authors differ considerably regarding the proper time for taking exercise. Some recommend early in the morning, when the stomach is empty, and the body

---

[*] See the Best Method of Preserving Health, p. 138.

[†] Adair's Medical Cautions, p. 410.

[‡] See Armstrong's Art of Preserving Health, Book III. line 39.

refreshed with sleep; but many cannot bear to take exercise when fasting, and consequently, that rule cannot be uniformly recommended. It is generally admitted, that between breakfast and dinner, when the weather is not too hot, is an excellent period for active exercises in the open air. It is certainly injudicious to take a great deal of exercise immediately after so heavy a meal, as dinner usually is in this country; at the same time, during the summer season, the dinner is usually earlier and lighter, and, consequently, at that period, persons may take exercise in the evening as well as the morning *. It is well known, that violent exercise is more necessary in cold than in hot countries, and is peculiarly essential during the winter season, for promoting perspiration, as the best defence against outward cold, and likewise for the better digestion of the gross and copious aliment we are apt to live upon at that period of the year †. Nothing, indeed, is more conducive to bodily health, than long walks in winter, when the air is pure and bracing, and the cold excites quickness of motion. Nor has any of the seasons a more beneficial influence on our health than winter. But this we counteract, by continually indulging in the heated air of our parlours, collecting materials for the diseases of the spring, which we then erroneously ascribe to that season of the year ‡.

2. *Place.*—In all large and well regulated cities, there

---

* Darwin justly observes, that in summer weak people cannot continue too long in the air, if it can be done without fatigue; and in winter they should go out several times in a day, for a few minutes, using the cold air like a cold bath, to invigorate and render them more hardy. Darwin's Zoonomia, Vol. II. p. 692.

† Arbuthnot on Air, p. 211. See also Strother on Health, p. 16.

‡ Salzmann's Gymnastics for Youth, p. 232.

ought to be particular play-grounds, or places for public exercise, where labourers, and people who work at particular trades, might assemble at certain hours for recreation, and amuse themselves with walking, or other healthful exercises, in order to prevent those diseases which may arise from the particular posture required in their business, if continued without remission, or any relaxation or change*.

The general decay of those manly and spirited exercises, which formerly were practised in the metropolis and its vicinity, has not arisen from any want of inclination in the people, but for the want of places for that purpose†. Such as in times past had been allotted to them, are now covered with buildings, or shut up by enclosures, so that, if it were not for skittles, Dutch-pins, four corners, and the like pastimes, they would have no amusements for the exercise of the body. And these amusements are only to be met with in places belonging to common drinking-houses; for which reason, their play is seldom productive of much benefit, but more frequently becomes the prelude to drunkenness and debauchery. Honest Stow, in his survey of London, laments the retrenchments of the grounds appropriated for martial pastimes, which had begun to take place even in his day‡.

This is a point indeed of such infinite importance, that it cannot be too strongly recommended to the attention of those

---

[*] Valangin's Treatise on Diet, p. 213.

[†] Near all great cities, there should be *hyppodromes* and *ambulaerums* for the benefit of air and exercise; which might be erected, either by subscription, or might, perhaps, be no unprofitable source of commercial speculation.

[‡] Strutt's Sports and Pastimes, Introduction, p. 46.

those who, from their situation in life, have it most in their power, either to preserve those places of public exercise already in existence, or to establish new ones; nor should they be confined to the neighbourhood of great towns, but they should also be extended to every village in the country, where a spirit for athletic exercises ought likewise to be kept up and encouraged.

3. *Quantity.*—The doctrines which have been published regarding the quantity of exercise to be taken, differ materially, and indeed it must necessarily vary, according to a number of circumstances, as age, the season, the constitution, the object, &c.

Cheyne observes, that the valetudinarian, and the studious, ought to have stated times for riding or walking, and that in good air. Three hours should at least be allotted for riding, or two for walking, the one half before dinner, and the other half, in the summer season, before going to bed; the first to beget an appetite, and the second to help on digestion, and to promote sleep *.

It is a just observation, that exercise, at all seasons of the year, should be proportioned to the powers. For the weak, in general, it is better to take three short, than one long walk. Not only is nothing gained by over-exertion, but subsequent rest does not recruit, and sleep cannot often be obtained †.

It ought to be constantly inculcated to mothers and nursery-maids, that children at all delicate, should not be allowed to walk too long at a time. Short efforts, with intervening repose, should be the motto of the nursery.

---

* Essay on Health, p. 98.

† Manual of Health, p. 292

When the bones are in the least too soft, it is incredible how much mischief is done, by keeping the limbs much on the stretch. Even healthy children of two or three years of age, have become indisposed, by walking about a mile, without even being hurried. Their own feelings are the best criterion *.

Exercise, we are told, ought to be continued only until we feel an agreeable lassitude, and a sensible degree of perspiration. If it be carried farther, it weakens instead of strengthening the body; and filling the lungs with heated blood, it may be productive of injurious consequences. If continued until a profuse perspiration, or a great lassitude takes place, it is very apt to be injurious.

Hence, however useful, and even necessary, exercise is, it ought never to be carried to excess. It is well known, that many labouring men, not only wear out their constitutions by hard work, (which they are peculiarly apt to do, when they work by the piece), but also incur diseases, from which they never recover. Many a fair female also, has been cut off, by carrying to excess the amusement of dancing, from the fatigue with which it is accompanied †.

Impressed with these ideas, the celebrated Darwin contends, that the necessity of much exercise has perhaps been more insisted upon by physicians, than nature seems to demand. Few animals exercise themselves so as to induce visible sweat, unless urged to it by mankind, by fear, or by hunger. And numbers of people in our market towns, of ladies, in particular, with small fortunes, live to old age, in

---

* Manual of Health, p. 292.

† Adair's Essay on Diet and Regimen, p. 71.

in health, without any kind of exercise of body, or much activity of mind [*].

The disadvantages of excess of exercise, are thus summed up by an intelligent physician. It renders the circulation unequal and tumultuous, weakens the nervous system, and the springs of life; exhausts muscular strength; disturbs and lessens insensible perspiration; and, by promoting sweat, (an unnatural and weakening evacuation), wastes the body, by discharging many of the nutritious parts of our solids and fluids [†].

Let us now consider the other side of the question.

It is an indispensable law of longevity, that one should exercise, *at least*, an hour every day, *in the open air* [‡].

Those who can, ought to spend two or three hours a-day on horseback; those who cannot ride, should employ the same time in walking.

It is a good rule, to appropriate a considerable and fixed time daily, for being out in the open air, taking moderate exercise, in proportion to the constitution and time of life [§]. Exercise, it is said, should, at least once a-day, proceed to the borders of fatigue, and never pass them.

---

[*] Darwin's Zoonomia, Vol. II. p. 692. This doctrine is strongly objected to by Dr Beddoes, notwithstanding the respect he entertains for the medical philosopher by whom it was brought forward. That many dowagers live long in provincial towns, he admits; but whether they live *in health* is the question. These females, in general, live in a constant valetudinary state; dissolved by heat; pinched by cold; harassed by sleeplessness on going to bed; unrefreshed by their tardy morning nap; faint when empty; oppressed when full; and, in the intermediate time, suffering under some of the other plagues of indigestion. Their nerves, also, commonly require drams, in the shape of drugs, to render their existence tolerable. See Beddoes' Essay on Consumption, p. 126.

[†] Adair's Medical Cautions, p. 402.

[‡] Hufeland on the Art of prolonging Life, Vol. II. p. 207.

[§] Code of Longevity, Vol. II. App. p. 45.

On the whole, in regard to quantity, I am much inclined to think, that excess of exercise is not so dangerous, as some physicians are apt to imagine. The judicious Celsus admits, that it need not be put an end to, until sweat is commencing, or at least that lassitude which does not amount to fatigue *. So far as my own experience goes, I am convinced, than even excess *is occasionally of use.* Impressed with opposite sentiments, I was formerly accustomed, to take only moderate exercise, sometimes on horseback, and sometimes on foot; walking perhaps three or four miles, at a moderate pace, I thought would be sufficient. But by way of experiment, I was accidentally led to take a walk of eight miles, on an ascent, and in cold weather, and to walk quickly, so as to throw myself into a violent perspiration. The consequence was, a hearty appetite for dinner, and a pleasant and comfortable feel for several days after. I am persuaded, that by active exercise, and the abundant perspiration thereby excited, the body gets rid of some morbific, and highly noxious matter, which renders the frame dull and sluggish, and that the body will become light and healthy when it is expelled. I would therefore strongly recommend it to all persons, who are not too far advanced in years, or not in a weakly state, at least once a month, to take a long ride or walk, and they will find themselves much the better for it †.

One

---

[*] See Grieve's Celsus, Book I. cap. 2. p. 25.

[†] I am glad to find these opinions corroborated, by the sentiments of my intelligent correspondent, the Reverend Doctor Gregory of Westham in Essex. The exercise of the mind, when carried to excess, he considers to be pernicious. The exercise of the body, on the contrary, even in excess, as wholesome. Over exertion of the body, it is true, may produce temporary illness; but frequently repeated bodily exercise, certainly, more than any other cause, keeps off chronical complaints. He adds,—' I am sometimes inclined to give a degree of credit, to the humoral patholo-

gy

One observation still remains to be made on the subject of excess of exercise.

Every body knows, that great fatigue may be induced by very little exercise, when it is of the active kind, and requiring strong muscular exertions; whereas, much passive exercise, as sailing, travelling in easy carriages, &c. may occasion little fatigue. Persons, therefore, confound the effects, and erroneously imagine, that they have taken a great deal of exercise, when they are extremely fatigued *. It is perhaps a good rule, that the lean should exercise *ad ruborem*, that is, till the body and spirits are gently heated, for that will help to fatten them; and the fat *ad sudorem*, that is, till they sweat; for that will help to melt down part of their fat, and, consequently, extenuate the body †.

4. *Age.*—It cannot be doubted, that both the nature and quantity of exercise, must vary according to the age of the individual; and that the same rules are not applicable to the young, to those who are in a state of manhood, and to those who are advanced in life.

In regard to youth, from early infancy, to the age of twenty, abundant exercise, without being too exhausting, is essential to promote the extension of the solids, and the growth of the body. Healthy children are hardly ever injured by being over-heated, unless they lie down upon the cold ground, or are cooled too quickly, or take any cold liquid,

---

gy, (which in my youth was scouted from the schools of medicine), and to imagine, that some morbid matter is thrown off by exercise. Or, is it that the organs are kept in proper play and tone by exertion, as we see, that particular muscles, used by certain artisans, are stronger and more vigorous in consequence of it?'

* Code of Longevity, Vol. II. App. p. 9.

† Lynch's Guide to Health, p. 290.

liquid, when extremely hot. It is frequently advisable, to take off a part of their clothes before they begin to exercise, and to put them on again as soon as it is over.

As to exercise in youth, it is necessary to distinguish the athletic from the feeble, and not to measure them by the same standard: the former may attempt all kinds and degrees of gymnastic exercises without danger; the latter must proceed more cautiously with respect to both. Each sort of exercise should be tried gradually, and the effect observed, before they are much exercised in a new way. But if they are healthy and able, their ambition should be roused by the distribution of prizes among those who excel.

The limbs of young people ought to be examined, and any particular part of the body feebler than the rest ought to be particularly exercised. For instance, the left hand and arm are commonly weaker than the right. They should, therefore, be more frequently employed in lifting, carrying, pulling, supporting the weight of the body with the left, &c. till it becomes as strong as the other.

Young people should never be set upon any thing beyound their size, their ability, or their strength, as taking too long a step at once, &c. as such exertions often prove injurious *.

Those who are in the vigour of life, require active exercises to support the powers of the constitution, and to ward off chronic and other diseases; but, however essential exercise is at that period of life, yet attention and prudence is still necessary, more especially if a person has not been accustomed to much exercise in his younger days. He ought, in that event, to get into the habit of it gradually, and

---

* Salzmann's Gymnastics for Youth, p. 424.

and not in too rapid a manner, otherwise his constitution must suffer from it.

In regard to exercise during old age, that requires more particular discussion; though, in general, it may be observed, that passive exercises are the best suited to that frail and feeble state.

People in years, require only gentle moderate exercise which does not occasion much fatigue, unless their habit of body is too full, when, in order to diminish its bulk a little, the exercise may be brisker. Walking, on the whole, agrees best with them, unless they have been long accustomed to any other. In regard to riding, so many old people have been killed by falls from horses, that it is necessary to pay particular attention to the kind of animal they ride. Perhaps mules would be the best.

Old people ought to discontinue exercise, as soon as a colour appears in their face, when the muscles swell, and they begin to grow tired and sweat; lest, by continuing exercise too long, they should not only dissipate their superfluous humours, but likewise the nutritious particles of their bodies *.

There is no rule more essential to those who are advanced in life, *than never to give way to a remission of exercise.* By degrees the demand for exercise may shrink, in extreme old age, to little more than a bare quit-rent; but that quit-rent must be paid, since life is held by the tenure. Whoever examines the accounts handed down to us of the longest livers, will generally find, that to the very last, they used some exercise, as walking a certain distance every day, &c. This is mentioned as something surprising in them, considering their great age; whereas, the truth is, that their living to such an age, without some such exercise, would have been the wonder. Exercise keeps off obstructions, which are the principal sources of diseases, and ultimately of death. Motion then is the tenure of life, and old people, who humour or indulge an inclination to sloth and inactivity, (which is too apt to grow upon them on the least encouragement), act as unwisely as the poor traveller, who, bewildered in tractless snow, and surprised by a chilling frost, instead of resisting the temptation to sleep, suffers it to steal upon him, though he knows, that, by its fatal blandishment, he can never expect to wake again, but must inevitably perish *.

---

* Nurse's Guide, with an Essay on Health, by an eminent physician, p. 111.

There is no point to which old people ought more to attend, *than to exercise their lungs*, for it is a decay in that organ, which frequently occasions their death. In extreme old age, death proceeds from the gradual cessation of circulation, and a due action of the lungs is indispensable for maintaining circulation in a proper state. It is a well known fact, that a great portion of elderly people drop away, merely from their lungs failing. The advanced age of schoolmasters, and other public speakers, of Prin the glassblower, &c. may perhaps be, in a great measure, attributed to the exercise given to their lungs. This opinion receives additional strength, from the circumstance, that the number of long-livers consists principally of those who have followed occupations which give much wholesome exercise to the lungs, as travelling people, gardeners, &c. From this idea of strengthening the lungs, a very respectable

---

* Institutes of Health, supposed to be written by Dr Clelland, p. 24. In confirmation of this, it may be observed, that dancingmasters, who continue to teach, live long; but if they retire from business, they soon die.

able person has long been in the habit of daily, or oftener, pushing quickly up an ascent on foot; and he finds, if he omits it even for a few days, he does not accomplish it with half the ease as before. Even running quickly up a pair of stairs, may answer the same purpose. Some such plan, steadily pursued, may be worthy of imitation, as well as gardening with keenness, riding about in airy situations, &c. all which must contribute to strengthen the lungs, and to promote health and longevity *.

On account of the importance of the lungs to the preservation of life, and the danger which old people are apt to fall into, of acquiring a habit of stooping, by which their lungs are injured. A less tendency to stoop, is the great advantage which short people have over the tall. There is a remedy, however, in the power of the latter, if they choose to avail themselves of it. I have often thought, that it would, in some cases, be advisable for them to wear stays, for the purpose of keeping themselves erect, where any assistance is necessary for that purpose. If an old man has no hesitation to use a stick to keep himself from falling, why should he refuse adventitious aid, to preserve the erect posture of his body, his chest open, his lungs in good order, and, consequently, his health †.

5. *Sickness.*—In acute distempers, notwithstanding the doctrines of Asclepiades to the contrary, rest is necessary; but when sickly people get into a convalescent state, exercise, under a proper system, is essential for their recovery.

Sickly people are apt to be alarmed, at the pain and

---

* See Code of Longevity, Vol. II. App. p. 44.

† Adair, in his Medical Cautions, p. 396. takes notice of young men wearing stays. But that would certainly be, as above mentioned, a fitter practice for old men, whose health is so much injured by stooping.

trouble which often accompany their first attempts to take exercise, at least, to any extent. They ought at first to desist, as soon as they begin to find themselves fatigued; but every day they will bear it longer and longer; and the more they follow it, the stronger they will become *.

Convalescents experience such surprising relief from gentle exercise, and good air, that their friends and connexions ought to insist on the trial being made, disregarding all the objections to the contrary, which the languid state of their mind, and of their body may occasion.

When the patient is exceedingly weak, a cotton hammaccoe or cot, ought to be slung in the bed-chamber, or any adjoining room, in the manner they are used in the West-India colonies, in which they may be swung daily, to any degree they can bear. This would answer instead of the pensile, or suspended beds, so much recommended by the ancients.

When invalids return from their exercise, if they find themselves chilled by the cold air, instead of warming themselves over the fire, they ought to sit down well-clothed, in a remote part of the room, until their feelings are gradually reconciled to the temperature of the air therein. By this precaution, all the hazard of rushing from one extreme to another, may be avoided.

When an invalid is confined at home by bad weather, any active domestic exercise, like that of the shuttle-cock, ought to be performed several times a day, in a room ventilated by an open sash, taking care to avoid the draught of air. This will be found a more salutary mode of warming the body, than by the heat of fires †.

Not

---

* Burton on the Non-naturals, p. 281.

† Adair's Medical Cautions, p. 409.

Not a day should be allowed to pass, without a degree of exercise accommodated to the strength of each individual. Few persons, more especially invalids, can long enjoy firm health, under a habit of indolence. It contributes to increase that languor of the animal, vital, and natural functions, which constitutes a very considerable part of every disease *. Indeed, indolence, like other vices, when indulged, gains ground, and at length becomes agreeable. Hence many, who are fond of exercise, gradually lose all the relish for it. This is particularly the case with gouty and hypochondriac people, which renders their disease in a great measure incurable †.

The weak and valetudinary, the studious and contemplative, *ought to make exercise a part of their religion*, as it is among some of the eastern nations; with whom pilgrimages, at stated times, are an indispensable duty, and where mechanical trades are practised by men of all ranks ‡.

Those who cannot take a sufficient quantity of exercise, are soon placed in an uncomfortable situation, and are liable to a number of disorders. Sleep is beyond their reach; and want of appetite, flatulency, anxiety, at one time obstructions, at another looseness, and all the diversified symptoms of nervous disorders, are their constant attendants. Men of letters suffer much from these circumstances, and are often the most unhealthy of human beings; whereas, if they followed a different plan, and united exercise to mental labour, their thoughts would be brighter, their works would do them more credit, and by living longer, they would be able to do more §.

---

* Adair's Medical Cautions, p. 402.

† Buchan's Domestic Medicine, p. 80.

‡ Cheyne's Essay on Health, p. 98.

§ Willich's Lectures on Diet and Regimen. It is unfortunate, that men of

6. *Miscellaneous rules.*—Bodily exercise should be so managed, once a day, as to excite the natural heat (glow); and before a meal. The advantages resulting from such, are thus described by Fulgentius: "Exercise, (says he), contributes to the preservation of human life; it dissipates all superfluous humours of a plethoric habit; it invigorates our faculties; it is a gain of time; the enemy of idleness, the duty of the young, and the delight of the aged. For exercise disengages, and expels through the pores, all superfluous humours; whilst the greatest injuries may ensue from a contrary conduct: hence the poet observes, "ease is not to be acquired unless it be combined with toil. Indolence is generally attended with dissolution *."

There

---

of letters are so inattentive to their health. Even that temperance by which many of them are distinguished, is no effectual remedy against the mischiefs of a sedentary life. They should endeavour not to perform all their avocations in a sitting posture, but occasionally to relieve at once their body and mind, by standing or walking about the room. In sitting, also, they ought to vary their posture as much as possible, and to sit sometimes on high stools or chairs, and sometimes on lower ones. A plan might be formed for the use of men of letters, by which their studies might be conducted in a manner less injurious to themselves than they are at present; but it would be extremely difficult to prevail upon them to alter any system they may have laid down for their own government.

* Code of Longevity, Vol. II. App. p. 5. It is proper to observe, that the skin is not to be regarded merely as an organ of secretion, destined for drawing off superfluous moisture, or saline particles from the general mass of fluids, but as a surface of more active circulation, which solicits the blood to the very extremities of the vessels, and thus contributes to support and complete the circulation of the blood, and to nourish the parts within. The skin is connected, in a peculiar manner, with all the parts of the cellular substance, interposed betwixt the muscles, and involving the blood-vessels. The state of the skin indicates the condition of that cellular substance, whose office it is to conduct the blood-vessels to all parts, especially to the muscular flesh, and to nourish the parts; and while the circulation of the skin is lively and active, that of the involved parts can never flag. The condition of the bowels, and of the skin, are the first and most natural points for the physician to attend to. It is by

regulating

There are a great variety of incidental observations, and of short miscellaneous precepts, with regard to exercise, which it may be proper to preserve, in a work intended as a foundation for the accumulation of human knowledge regarding so interesting a subject. Such a collection, will, at the same time, prove, that to carry through successfully such an attempt, will be attended with great difficulty.

General Rules as to Exercise.

1. The effect of any exercise should be as general as possible, and not confined to any particular limb or part of the body; those kinds of exercise, therefore, which give action to the greatest number of the bodily organs, as walking, running, riding, &c. are to be preferred *. 2. Those who follow any profession, as smiths, weavers, &c. when they exercise their bodies, should pay particular attention to those parts which are usually most deprived of motion. 3. Little benefit is to be expected from exercise, unless it be performed in a pure air; and hence it is, that many manufacturers and artificers, who perform all their labour

under

---

regulating these, that he regulates the pulse; by stimulating or soothing them, that he raises or depresses the vital actions. And it is matter of common observation, that in animals, a good skin is the criterion of health; and the dryness of the skin, the forming of scabs or eruptions upon it, and the clapping of the hair, (as it is called by those who have the care of flocks), are the first and surest signs of approaching disease.

* The legs of a runner, the lungs of a singer, and the arms of a waterman, are generally stronger than others, because they have habitually used them for years: and the constant and plentiful influx of the blood and spirits into them, makes them more readily admit these supplies, so that the channels of both the vessels and muscles are become larger and more elastic, and consequently stronger. And that exercise, therefore, which is the most universal, will of course be the most preferable for making us strong. Strother's Essay on Sickness and Health, p. 231.

under cover, and are often exposed to unwholesome effluvia, from the materials they work upon, are more unhealthy than almost any other class of men. 4. The higher and the drier, and the more varied any air is, the more beneficial must be the exercise. 5. By exercise in the open air, the body becomes less sensible to its impressions, and hence various disorders may be prevented. 6. On commencing any exercise, begin with the more gentle, and then proceed to the more violent; and as sudden transitions are always wrong, follow the same rule, when exercise is given up. 7. In all exercises, attention must be paid, when it is practicable, to the preserving a proper carriage, or holding the body erect, and also to such a position of all the parts of the body, that none may be exposed to injury. 8. Exercise is more necessary in cold countries than in hot; the perspiration in the latter, is violent enough without exercise, but never in the former. 9. A good appetite after exercise, is a proof that it has not been carried to any improper excess. 10. Persons ought not to be irregular or desultory in the exercise that they take, flying from one extreme to another. Hence, sedentary people should commence the use of exercise with much caution, lest the sudden stimulus given to the constitution, by violent exertions, should throw the whole frame into disorder. Moderate and steady exercise, pursued daily, is certainly more safe. 11. After having taken exercise, we should not venture to expose ourselves to a current of air, or rest out of doors, in a cool, or exposed place, or lie down upon a green plot. A sudden change of temperature, by suppressing perspiration, may be extremely injurious. 12. After severe exercise, we run a great risk of catching cold, unless we take care to prevent it, by rubbing our bodies well with a dry cloth, and changing our linen, which should be previously well dried. 13. When persons are confined within doors, leading a sedentary life, they will not compensate for the want of regular exercise, by a hard ride or walk once a week; for the nerves of such people, being unaccustomed to bear such a degree of agitation, are over-strained and relaxed by it, and the circulation of the fluids, which is in general slow and languid, will be thrown into disorder. 14. Exercise should always be accompanied with a due attention to temperance, otherwise, instead of a remedy, it will become an evil *. 15. Exercise should be repeated, as often as is necessary, to keep the body in a healthy state. 16. It is not necessary to adhere strictly to any particular kind of exercise. The best way is, to take them by turns, and to use that longest, which is most suitable to the strength and constitution. 17. It is a good rule, frequently to vary the exercise you take. The late earl of Panmure, took constant and vigorous exercise; and was accustomed to ride and walk *alternately*, and found great benefit from that practice. Even after a violent ride on horseback, walking for some minutes is beneficial. 18. As a proof of the advantage of a change of exercise, it is remarked by Lord Bacon, that it is requisite to long life, that the body should never abide long in one posture, but that every half hour at least, it should change the posture, saving only in sleep †.

We shall next proceed to state the rules regarding

---

* The opulent derive much less benefit from their diurnal exercise, because they counteract its good effects by a luxurious indulgence of that appetite which their exercise has excited, superadding thereby, the fever of digestion, to the fever of exercise. See Adair's Medical Cautions, p. 406. Some sportsmen are more than ordinary abstemious on the days of hunting, and have experienced the benefit of living on those days, on the plainest food, and in moderate quantities.

† Code of Longevity, Vol. IV. p. 204.

exercise, as connected with food both solid and liquid. 1. Muscular motion is most agreeable and healthful, when the stomach is neither too empty, nor too much distended. 2. It is not advisable to take violent exercises immediately before a meal, as it may prevent the secretion of those gastric and other juices, which are necessary to promote digestion. 3. Nothing can be more injudicious than to sit down to a substantial dinner or supper, immediately after a fatiguing walk, or other violent exercise. When the blood is heated, and the body in a state of perspiration, devouring quantities of solid food can never be wholesome. Every man, therefore, should rest for some time after exercise, before he sits down either to dinner or supper. 4. Exercise is likewise hurtful, immediately after meals, as it obstructs digestion, by propelling those fluids to the surface of the body, which are designed for the stomach to promote the solution of the food, and thus suspends the process of digestion.

In regard to liquids, it is an important rule, carefully to avoid drinking cold liquors, either during, or after violent, or great exercise; for the principal heat of the body being brought to the surface, the heat that is left in the inward parts, feels too sensibly the chill of any cold application, suddenly brought in contact with them. By drinking liquids, *blood-warm*, they would quench their thirst better, and they would do no injury *.

The

---

* Lynch's Guide to Health, p. 290. Mackenzie's Hist. of Health, p. 382. We ought not to quench the thirst we generally feel after exercise by cooling liquids. If we cannot wait till we are cool, some warm or tepid liquors may be taken; or, if likely to be faint, a mouthful of bread with a little salt, to gain time till the blood and the liquor to be drank have acquired a more equal temperature. When heated by exercise, diluents made too hot are highly improper. It is much better to eat

some

The following rules regard clothing, and bathing *, as connected with exercise: 1. In taking exercise, much attention should be paid to the ease and freedom of dress, particularly

---

some solid meat, such as cold animal food and bread, by which the digestive organs may be exercised, and to drink after it some ale or beer, or wine and water; but never strong wines, or ardent spirits. Perhaps the most suitable of all substances, to mix with water as a cooling drink after exercise, is the pure or essential acid of tartar. This affords a cooling and refreshing beverage, without relaxing the bowels like lemonade.—Willich's Lectures on Diet and Regimen, p. 465.

* As a proof of the benefit of warm-bathing in old age, I beg to refer to the subjoined excellent letter from the celebrated Dr Adam Ferguson.

Extract of a letter from Dr Adam Ferguson, dated Hallyards, near Peebles, 2d January 1807.

" Why I took to warm-bathing I cannot give any precise account of; but so it was, that I borrowed a bathing-tub, and used it frequently: but mind that I was turned of fourscore, and had little else to do; and this, whether from age and infirmity, is required to excuse so much waste of time. Bathing is most natural, I take it, in climates where the people are made idle by extremes of heat and cold. I have often wondered how the Romans could afford so much time to it; but they were very idle, especially under the emperors. I certainly had profited by it at Bath, about twenty or thirty years ago, and was inclined to ascribe the effect, more to the temperature, than to any particular quality of the water; but the speculative must have theory as well as experience on their side. I believe that heat, no less than food, is an aliment of animal life; we take this aliment in respiration, and guard against the excessive want of it by clothing, shelter, fire, &c.; but there is nothing more effectual than warm-bathing. The body is placed at once in one general state of salutary temperature. It is prepared to bear cold, that is, to undergo expence, or waste of heat, with less inconvenience than otherwise. I have not found any particular precautions against those occasional checks to animal life, which are called *taking cold*, at all necessary on bathing-days, and I am certainly less subject to these accidents since I began bathing, than formerly, and have scarcely known them at all, except upon occasional intermissions, for days or weeks, of bathing. I go about freely after the bath. I have used it now above two years, and have no wonders to ascribe to it, further, than a possible retardation of what old age would otherwise have brought upon me. The temperature I use is from 96 to 97 of Fahrenheit's thermometer; and I remain in the water for about half an particularly of the neck and joints, that the circulation may not be confined to any one part, but be permitted to move on every where with freedom and ease. 4. If young men, before they enter into any violent exercise, would wear a flannel waistcoat next their skin, they would escape many illnesses; even a cotton vest is better than linen. 3. After violent exercise, the under-clothing should be shifted as soon as possible, and dry warm linen, cotton, or flannel, put on next the skin. 4. It is found very refreshing, after fatiguing exercise, to wash the feet in warm water, before going to bed. 5. Dr A. P. Buchan is of opinion, that immersion in warm water, would be the best mode of averting the injurious effects of a boxing-match.

General rules regarding exercise have also been given, connected with the mind; in particular the following: 1.

---

an hour. I use it every day when there is no particular hindrance. I owe the thoughts of it very much to Count Rumford, to whom the public is so much indebted for the application of science, to relieve the distresses, and promote the accommodation of human life. I find it most convenient to bathe about the middle of the day, and I found it better then, than at bed-time, unless there be wanted a particular stimulus to perspiration, which is not my object. I know no difference of waters, whether sea or spring water. I know of no inconvenience attending it, but loss of time, which may be too precious to be so employed. The aged and the frigid, however, will probably think it well employed.

"As to regimen, I had a serious illness above twenty years ago, which the physicians imputed to repletion of blood, and recommended restriction of diet. I soon left off wine, and all fermented liquors; all butcher meat in the solid, or otherwise than in soup; and fared, as I best could, on vegetable food. I never felt any languor from the use of this diet; and have rather been more uniformly in what is called spirits, now up to the middle of my 84th year; and may live, for ought I know, longer than is of any consequence to the world or myself."

These valuable hints, from so respectable a character as Dr Ferguson, cannot fail to be highly acceptable. Such a life is well worth preserving, as long as nature will admit of it.

1. Serious thinking, when we are walking, or taking any other exercise, very soon fatigues us; but if we give ourselves up to amusing thoughts, the exercise is restorative. 2. One should never read when walking; if you must read when abroad, sit down. 3. Those exercises which give motion to the body, and at the same time, amuse the mind, such as bowls, tennis, &c. are particularly serviceable. 4. When we take exercise for health, we should not suffer any object seriously to occupy the mind; but should endeavour to employ ourselves with pleasing thoughts; or to be amused with the conversation of agreeable or intelligent friends. 5. It is very desirable, to have a certain object or spot by which the exertion is to be bounded, as to call at the house of a friend, to see some delightful prospect, and the like *.

Some, as an apology for indolence, contend, that when exercise becomes habitual, or is undertaken with reluctance, it ceases to be beneficial; but this is contrary to observation and experience: for those who take daily exercise, never find their strength or appetite impaired thereby; whereas those who, from a change of circumstances, have made a transition from labour to indolence, have embittered and shortened the remainder of life †.

Lord Bacon confidently affirms, that frequent purges, and made even familiar to the body, are more available to long life, than exercises and sweats, by which, not only the humours and excrementitious vapours are exhaled and

---

* A gentleman who lived at Hackney, near London, walked in every morning to set his watch with the clock at the Horse-guards. By having even that trifling object to accomplish, the exercise he took was doubly beneficial.

† Adair's Medical Cautions, p. 405.

and consumed, but together with them, the juices and good spirits, which are not so easily repaired; and he recommends, for that purpose, purges, to be taken immediately before meat, because they dry the body less, and least trouble the belly *. But the dangerous consequences of frequent purgation, have been already sufficiently explained in the preceding chapter on digestion.

There are three expedients to procure warmth in cold weather; fuel, warm clothing, and exercise. Can there be any question which is to be preferred? Fuel is certainly the worst, from the relaxing quality of fire acting upon the human body, and breaking, in some measure, its texture, as it does that of certain fruits placed to roast before it. A large fire also, is very injurious to the eyes. Warm clothing is not so bad, but still it is disagreeable carrying a load of clothes about one; and it does not prevent the body being often injured by the impressions of the atmosphere; whereas, if the body is hardened by exercise, nothing affects it †.

Exercise is also attended with other advantages. It prevents mischief, whilst its opposite, indolence, not only occasions disease, and thus renders man useless to society, but promotes all manner of vice. An idle man, must, in a greater or lesser degree, be vicious. The mind, if not engaged in some useful pursuit, is constantly in quest of ideal pleasures, or impressed with the apprehension of some imaginary evil. From these sources proceed most of the miseries of mankind. Man certainly was never intended to be idle. Inactivity frustrates the very design of his

---

* Code of Longevity, Vol. IV. p. 217.

† Institutes of Health, p. 23.

his creation; whereas an active life is the best guardian of virtue, and the greatest preservative of health *.

Another advantage derived from exercise is, the occupation it furnishes, and the vacant time which it fills up. What is the indolent to do with those hours which he ought to employ in exercise? They must either be devoted to total inactivity, or to unnecessary sedentary application, (for unnecessary it must be, as there is time enough, during the rest of the day, for study), or to vicious purposes.

One great advantage of labour or exercise is, that it makes the coarsest fare agreeable. When Dionysius the tyrant had tasted the black broth of Lacedemon, he exclaimed against it as miserable stuff; the cook replied,—'it was no wonder, for the sauce was wanting.' 'What sauce?' says Dionysius. The answer was,—'*labour and exercise, in hunting, running, sweating; hunger, and thirst; these are the sauces we Lacedemonians use* †.'

Conclusion.

I have thus brought to a conclusion the mass of matter I had collected on the subject of exercise. Various circumstances have induced me to dwell upon it at greater length than I had originally intended. The more I advanced in the inquiry, the more important it seemed to be; and of all the points connected with the preservation of health, it was the one to which the least justice had hitherto been done by any individual author; consequently, from the investigation thereof, the greater benefit might be expected.

---

* Buchan's Domestic Medicine, p. 80.

† Cicero, 3 Tuscul.

It was the more necessary to enlarge on the head of exercise, as many physicians have paid infinitely less attention to it, than such a subject merits. Of this there cannot be a stronger instance, than in the case of the celebrated Darwin, who, in his *Zoonomia*, or laws of organic life, containing a catalogue of diseases, and the methods of cure, has only dedicated a few sentences to the investigation thereof *.

To conclude, it seemed to me peculiarly essential to dwell on the advantages of exercise, and to explain all its various kinds; because, if persons could but be persuaded of the benefits resulting from it in the cure of disease, when taken early, they would be more inclined to give it a fair trial, and, above all, to persevere in it. The moderns, however, have unfortunately, in a great measure, lost those favourable impressions, and high ideas of the utility of exercise, which the ancients so justly entertained.

Result of the Inquiries regarding Athletic Exercises, recently made by the Author of this Work.

The celebrated Lord Bacon, in alluding to the Athletic Exercises of ancient and modern times, observes, that the practices are known, but the philosophy that concerneth them is not much inquired into. This he imagines may be the case, because the arts and practices therewith connected,

---

* See Darwin's Zoonomia, Vol. II. p. 690.

nected, are supposed to be obtained, either by an aptness of nature, which cannot be taught, or only by continual custom, which is easily prescribed; but though he contends that these opinions are not true, yet he forbears to note any deficiencies. He concludes with remarking, that the excellency of those practices serveth, for the most part, but for mercenary ostentation, *yet in mediocrity they are for use* *.

Before I knew that such doctrines were sanctioned by the authority of this great philosopher, I was led, in the course of the investigations I have been carrying on regarding health and longevity, to make a very extensive and particular inquiry, into the nature and effects of athletic exercises; also into the various arts and practices by which the frames of men, or other animals, could be strengthened, or even the opposite effect of *wasting*, could be produced. The information which I have been fortunate enough to collect, regarding these particulars, has been highly satisfactory; and the reader will be enabled to estimate the importance thereof, from a perusal of the following observations.

The points to which I propose more particularly to allude, on the present occasion, are as follow: 1. The form of the individual fit for training. 2. The proper age. 3. The time required. 4. The medicines used. 5. The air necessary. 6. The liquid food. 7. The solid food. 8. The exercise taken. 9. The quantity of sleep. 10. Miscellaneous articles. 11. The diseases which training may occasion. 12. Its effects upon the body. 13. Its effects upon the mind. 14. Whether the effects of training are permanent. 15. The means of wasting strength, and the effects thereof; and, lastly, Some observations on the utility of such inquiries *.

---

* See Bacon's Works, Vol. II. p. 46. Also, Code of Longevity, Vol. IV. p. 267.

1. *Form and size.*—A person trained to boxing, ought to be of a good size and weight; but in regard to running, the size is less material: It may vary from five to six feet high, beyond that is too large, nor is there an instance of a very big man being a first-rate runner. One of the most famous runners ever known, (West of Windsor), who, at the age of forty-four, ran thirty-one miles in four hours and a quarter, is only five feet four inches high. Long thighs and short legs are desirable for running †. Wrestlers ought to be of a middle size, athletic, and, in particular, full breasted and broad shouldered, that they may possess both wind and strength. They should also have brawny legs and arms, and yet be clean limbed ‡.

It is remarked, that a head proportionally small, betokens bodily strength, and a person so formed, is reckoned peculiarly fit for training §.

2. *Age.*—Eighteen is the earliest age fit for training, and thence to forty, but seldom older; though attention to diet and exercise, upon the same system, would doubtless be of use to persons beyond that time of life ‖.

3. *Time required.*—It is supposed, that two months are sufficient to bring a man into good plight, either for boxing or running a match, provided he is previously in a tolerably good condition **. Sometimes a month will do for

---

* The whole communications on which this paper is founded, are printed in the Second Volume of the Code of Health, commencing at p. 82. of the Appendix, and terminating at p. 164. There are also some additional observations, p. 281. In the following notes, the page of the volume will only be referred to.

† P. 93. ‡ P. 163, 164. § P. 103. ‖ P. 93. ** P, 93,

running * ; but at other times it will require three months, when the person is fleshy †.

4. *Medicines.*—With a view of clearing the stomach, and getting rid of all superfluities, either of blood or any thing else, and also to promote good digestion afterwards, medicines are given when the training is commenced. They begin with an emetic; and in about two days afterwards give them a dose of Glauber salts, from one to two ounces; and, missing about two days, another dose, and then a third. It is supposed, that one emetic, and three doses of physic, will clear any man of all the noxious matter he may have had in his stomach and intestines ‡. In training for running, only one dose of salts at the beginning is necessary; and if it is not found to answer, another dose, in a proper quantity, is administered §. The celebrated trainer for running, John Smith, generally gave them an emetic also, after they had been in training with him for some time; and if they were of a plethoric habit, he required them to lose eight ounces of blood from the arm ‖.

The ancients, in order to empty the stomach, previous to their entering on the regimen peculiar to the athletæ, seem to have preferred the use of emetics to that of purgatives. Stimulating glysters, also, were occasionally administered; and one or other of these modes of evacuating the stomach or intestines was practised, whenever the appetite appeared to flag **. In order to exercise the patience of the ancient athletæ, and to accustom them to bear pain without flinching, they were occasionally flogged on the back, with the branches of a kind of rhododendron, till the blood flowed plentifully. By diminishing

---

* P. 103. † P. 93. ‡ P. 93. § P. 104. & 106.

‖ P. 281. ** P. 120.

ing the quantity of the circulating fluid, *this rough kind of cupping*, was also considered as salutary, in obviating the tendency to plethora, to which they were peculiarly liable *.

It is proper also to observe, that the necessity of taking medicine, for those who are trained to the acquisition of athletic strength, is not confined to man alone, but is a general rule. Thus, race-horses are purged two or three times a-year, each consisting of three doses, preparatory to their getting into training exercise; and when they use mild physic, it makes them afterwards thrifty and healthful †. Game-cocks also, are physicked, three or four days before fighting ‡; or fed on barley, which is reckoned a *scouring* food §.

5. *Air*.—The necessity of pure air is uniformly insisted upon by all the trainers to athletic exercises. The more they are in the open air, the firmer their flesh becomes; and they soon learn never to mind the weather, only they must change their clothes if wet ‖. The morning air being cooler, is always preferred for taking exercise **. Hence, rising early in the morning, is considered to be indispensable ††.

Among the ancients, to be exercised in a pure salubrious air was deemed of essential importance. The principal schools of the Roman athletæ were accordingly established at Capua and Ravenna, places, the air of which was reckoned the most pure and healthy of any in Italy. They carried on their exercises in the open air, in all sorts of weather, the changes of which soon ceased to affect them ‡‡.

---

* P. 121. † P. 142. ‡ P. 154. § P. 151.

‖ P. 97. ** P. 101. †† P. 97. ‡‡ P. 121.

Air is also of infinite consequence to other animals. Horses under training, are exercised as much as possible in the open air; and in order to give game-cocks a good constitution, pure air is found to be essential *.

The salutary influence of the atmosphere, likewise, is found to be the best means of promoting recovery from disease. When game-cocks are shut up in close penns, they contract an infectious disease called *the Roop;* their head swells, and there is a fetid discharge from their eyes and nostrils. There is no cure for this disease whilst they are confined in the penns; but if they are turned out to their walks, *where they get air and exercise,* most of them will recover †.

6. *Liquid Food.*—There is no circumstance that seems to be more essential, in training up persons to the acquisition of athletic strength, than to permit them to take only a small quantity of liquid food. Those who are trained to boxing, must not exceed three English pints during the whole day, taken at breakfast and dinner, and a little after supper ‡. Those who are trained to running, are allowed as far as four pints, taken at different times in the course of the day §. The ancient athletæ also, were allowed but a very small quantity of fluid. This *dry diet,* as it is termed, seems to have constituted an essential and important part of their regimen ‖. The ancient athletæ likewise, were allowed to drink nothing but water, or some species of thick sweet wine; but in modern times, water alone is never given during training **. Good and old malt liquor, which

---

* P. 153.

† P. 283.

‡ P. 95. "The less one drinks the better," says Jackson, p. 101.

§ P. 124.

‖ P. 119. Sheep also thrive best, and live longer, on a *dry diet.*

** P. 101.

which has not been bottled, is reckoned best. Sometimes it is taken with a toast in it *. Some people will have tea, but it is not recommended, nor is it strengthening; and no liquor is given warm. Sometimes white wine and water is given for breakfast, to a person under training, who does not like malt liquor †. If a person trained, insists on having wine, from being accustomed to it, red wine is preferred to white; and half a pint of wine is allowed after dinner, but none after supper ‡. Spirits are never permitted, on any consideration whatever, not even with water. Milk is never given, as it is apt to curdle upon the stomach, and has a fattening quality. Liquor is never given before meals, unless in cases of extreme thirst. *The liquor should not be taken in great draughts, but by mouthfuls, which quenches the thirst better, the great object required.*

The reasons assigned for these restrictions are, that too much liquor is apt to swell the belly, which is bad for the wind; and much drinking promotes perspiration, which is extremely weakening, if not occasioned by exercise §. Drinking also encourages soft unhealthy flesh ‖.

With physic, warm gruel is given to work it off, after which, they get a little broth, with boiled mutton; but the broth must be allowed to cool, in order to get off the fat, and then warmed up again. Beef-tea, if used, must be managed in the same way; so attentive are these trainers to the smallest minutiæ of diet.

---

* P. 104. Jackson, the celebrated trainer, affirms, "If any person accustomed to drink wine, would try malt liquor for a month, he would find himself much the better for it." p. 102.

† P. 95. ‡ P. 95.

§ See p. 95. and 96., where it is remarked, that if a person inclined to corpulency, instead of taking large draughts, and great quantities of liquor, would be satisfied with three pints a day, he would imperceptibly lose two or three pounds of his weight, in the course of two months.

‖ P. 101. Race-horses get drink twice a day only. Soft water is preferred; and it is given cold, and never hot, except during physic or illness, p. 143. In training game-cocks, the water is got of as soft a quality as possible, and a little toasted bread is put into it, to make it still softer, p. 154.

7. *Solid Food.*—This is a very extensive subject. It may be discussed under the following heads: The kind of food, whether animal or vegetable; the quantity allowed; the mode of dressing; the times of eating; the condiments or seasoning permitted; and, miscellaneous particulars.

The diet of persons, when trained, is extremely simple, consisting only of animal food and stale bread *. Turnips, carrots, or other vegetables of that sort, are never given, being difficult to digest; nor potatoes, as they are watery. No fish whatever is allowed, being also reckoned watery, and not to be compared with meat in point of nutriment. No butter nor cheese is given, on any account, cheese being accounted indigestible; nor eggs, excepting the yolk raw, in the morning, which is supposed to prevent bilious complaints. Veal † and lamb are never given. Sometimes, for a change of diet, those who are trained to running, are allowed a fowl or rabbit once a week; but it must be eaten with vinegar ‡. No pork is given in modern times, being apt to purge some people. The legs of fowls, being very sinewy, are much approved of; but, on the whole,

---

* Soft or new bread is never given, being of a spongy nature, and expanding in the stomach. Stale bread is wholesome, but probably biscuit or any hard toasted bread might be as good. Several people prefer biscuit, p. 101. The ancients preferred bread made of the whole flour; and unfermented bread was preferred to that prepared with leaven. A sea-faring man has been heard to observe, that he was always sensible of a diminution of muscular strength, when he left off the use of biscuit, and ate common bread, p. 119.

† P. 94. ‡ P. 104.

whole, beef and mutton are accounted the best kind of diet. Men will live longer on beef, without change [*], than on any other kind of animal food; and it is the most nourishing; but mutton is reckoned to be most easily digested. The meat must always be fresh, and never salted, as that would occasion thirst. Fat, being of a greasy nature, creates bile, and fouls the stomach; hence the lean of meat is preferred to the fat; but the lean of fat meat is the best [†].

No quantity of meat is fixed, as so much depends upon the constitution and appetite. In general, they are allowed as much as they can eat [‡]. Indeed the ancient athletæ always ate to satiety, and were sometimes even forced to gorge themselves with food [§]. It is observed, that little men will eat as much as large men, and frequently more [‖].

As to the mode of dressing the animal food they take, beef-steaks are reckoned very good, but they should be rather *under done;* and, indeed, meat under done is, in general, given to those who are put in a course of training. It is better to have the meat broiled, than roasted or boiled, by either of which, nutriment is lost [**]. Pyes and puddings are never given, nor any kind of pastry. As to hard dumplings, people might as well take earthen ware into their stomach, they are so indigestible [††].

---

[*] The celebrated trainer to wrestling, Sir Thomas Parkyns, greatly preferred beef-eaters to *sheep-biters*, as he called those who ate mutton, p. 163.

[†] P. 94. and 95.; also, p. 104. In training, any tendency to fat is prevented as much as possible. Four game-cocks reduced to, or at their athletic weight, were killed, and found to be very full of blood, with large hearts, large muscles, *and no fat*, p. 158.

[‡] P. 104.

[§] P. 119.

[‖] P. 95.

[**] P. 94.

[††] P. 95.

Two full and substantial meals are given in the day. They breakfast upon meat about eight o'clock, and dine at two. Suppers are not recommended; but they may take a biscuit and a little cold meat, about eight o'clock, two hours before they go to bed. It is reckoned much against a man's wind to go to bed with a full stomach, and they, in general, take a walk after supper *. The first meal must be always digested before a second is given. In training game-cocks, it is a constant rule, before they are fed a second time, to examine *the crop*, to see that it is quite empty, and the food formerly taken, properly digested †. Very little salt is permitted; some vinegar, however, is allowed with the food, as it prevents thirst, and is good to promote leanness ‡. In Yorkshire, the meat is steeped, also, in vinegar. The vinegar must be taken cold §. No spices or hot drugs are allowed, being found contrary to the athletic temperament ‖.

The following miscellaneous particulars occur regarding this part of the subject. It is observed by Jackson, the celebrated trainer, that the use of solid animal food, seems absolutely requisite to produce great bodily strength **. This doctrine seems to be confirmed, by the information which has been obtained regarding the comparative health and longevity of the Mahometans, and the Hindoos of India. The Mahometans, when they can afford it, use a portion of animal food with their rice, (either beef, mutton, or fowl), dressed with spices. The Hindoos, on the other hand, live chiefly on rice, mixed with pulse, and made savoury with butter and spices. The beverage of both is water. Yet the Hindoos, who being husbandmen, mechanics, or soldiers,

---

* P. 94.
† P. 94.
‡ P. 106.
§ P. 151. and 157.
‖ P. 154.
** P. 103.

diers, and who, consequently, should be healthy, are old at fifty, seldom arrive at the age of seventy, and are often carried off in five or six hours, during the monsoon season, by the *cholera morbus, not having stamina enough to support the evacuations attending that disease.* Whereas the Mahometans live to a great age, sometimes to upwards of ninety *.

It is proper here to observe, that the practice of the ancients, and of the moderns, differs considerably in regard to diet. The food of the ancient *athletæ*, originally consisted of dried figs, new cheese, and boiled grain †; but animal food was afterwards introduced as a part of their regimen, and it was found to produce firmer flesh, and to give more real muscular strength than vegetable diet ‡.

Of meat, the ancient athletæ were restricted to the use of pork, which, Galen asserts, contains more real nutriment than the flesh of any other animal used as food by man. Indeed he affirms, that if the athletæ lived but for one day on any other species of meat, they found, that next day, their vigour was manifestly impaired. Modern trainers prefer beef or mutton; which, as food, have probably been brought to greater perfection in modern, than in ancient times. The ancient athletæ also, sometimes ate goat's flesh, which was reckoned highly nutritious §.

8. *Exercise.*—Trained men always begin their exercise early in the morning: in summer, at five, and in winter at half past six, or as soon as it is light. The great object of exercise is, to produce perspiration sufficient to take off the superfluities of flesh and fat, to reduce the quantity of blood, and to make it thinner and lighter, by which a person gains wind and strength, and giddiness is prevented. Sufficient perspiration is usually produced by exercise, and

---

* P. 11. † P. 117. ‡ P. 118. § P. 11.

no sudorific drugs are given for that purpose [*]. Those who are trained to boxing, get a run in the morning; but are not so violently sweated as those who are trained to the foot-race. The latter take a run for three miles, twice a day; and the sweating process, which is intended to remove the obesity, is increased by putting them between feather-beds, and the drinking of warm diluents. Every two days, they are thrice sweated in this way, well rubbed with flannel, and kept within doors till cool [†]. During *the run*, those who are trained to boxing are always in flannel; but they take their walking-exercise in their usual clothes. When they come home, they are generally laid down on a bed, and gradually rubbed dry, and clothed in that situation one limb after another [‡]. After taking their regular exercise, they are employed in cricket and other active amusements. Quoits are reckoned a good exercise for them. In Broughton's time, they were accustomed to have music and dancing. If a muscular man, during his training, gets much thinner, his exercise must be reduced; but if he gets fatter, or more muscular, it is a proof that it agrees with him [§].

Exercise, on the whole, seems to be the most essential branch of the athletic regimen. Game-cocks, when gaining strength, are shut up in close penns, and excluded from the air; but it is necessary to give them exercise, and for that purpose they are taken out *to spar*, their spurs being covered, that they may not bruise or wound one another [‖]. In regard to horses, the exercise is still more violent, as more depends upon it than is commonly imagined [**]. It is a general rule, *that perspiration, from exercise, never weakens* [††].

---

[*] P. 96.
[†] P. 104.
[‡] P. 97.
[§] P. 102.
[‖] P. 97.
[**] P. 139.
[††] P. 102.

The union, however, of vigorous exercise and pure air, is the great secret for the acquisition of strength. Diet, itself, seems to be but a secondary consideration, at least if one may judge from the great strength of the natives of the Sandwich islands, who were much superior in that respect, even to British seamen, though their food, both solid and liquid, is of the simplest nature. Indeed their muscular strength is attributed, by an intelligent observer, to their not using stimulating food or drink, and thus being in a manner in a perpetual state of training *.

In regard to exercise, if followed up with perseverance and constancy, and not carried to excess, it may be gradually increased, even in old age, to what would be thought a wonderful degree; and, with its increase, the faculties strengthen, and an approach to youth returns.

9. *Quantity of Sleep.*—Persons trained to athletic exercises, ought to go to bed early, (about ten o'clock), and are allowed from six to eight hours sleep †. Indeed, eight hours sleep is in general reckoned necessary, though much depends upon habit. People who take a good deal of exercise must have rest ‡. The ancient athletæ, were permitted to sleep as many hours as they chose; and great increase of vigour, as well as of bulk, was supposed to be derived, from long continued and sound repose §.

10. *Miscellaneous Articles.*—In training to athletic exercises, cleanliness is particularly necessary ‖. Bathing is of great use; and, if there is an opportunity, bathing three times a-week in salt water is salutary. Fresh water is good, if salt cannot be had; but the shorter time a person remains in the water, the better. It is a useful practice, to

---

* Dr A. P. Buchan.—P. 149.

† P. 76.

‡ P. 97.

§ P. 102.

‖ P. 153.

prevent colds, for men to bathe their feet in cold water every morning [*]. Fewterell, the boxer, also recommends washing the loins and arms with cold water, and to use no soap on such occasions [†]. Keeping the feet *perfectly dry at all times*, is essential [‡]. If the legs are swelled by a long journey, when the person retires to rest, the feet should be raised higher than the head and body [§]. Young people may wear calico next the skin, but older people in general wear flannel [||]. Persons trained never sit down, after taking exercise, without changing their clothes, for fear of rheumatism [**]. Those who are trained to athletic exercises, must abstain from excesses of every kind; or, in the words of a great classic,

> "Qui studet optatam cursu contingere metam,
> "Multa tulit, fecitque puer, sudavit et alsit;
> "*Abstinuit Venere et Baccho.*"

11. *Diseases.*—The only bad effect attending training, in modern times, is, that the body at first becomes a little feverish [††]; but, besides the various accidents to which the ancient athletæ were necessarily exposed, in the course of their exercises and combats, they were liable to a rupture of blood vessels in the lungs, to apoplexy, and to lethargic complaints [‡‡].

12. *Effects on the Body.*—The training to athletic exercises, has important effects upon various parts of the body, as the head, the stomach, the lungs, the skin, and the bones; and also tends materially to improve, and to preserve the shape of the body, and to promote its duration.

In regard to the head, a man in the best ordinary health, when he strikes or receives a few blows, becomes giddy [§§].

---

[*] P. 99.
[†] P. 112.
[‡] P. 108.
[§] P. 97.
[||] P. 97.
[**] P. 101.
[††] P. 97.
[‡‡] P. 122.
[§§] P. 89.

This giddiness is much owing to excess of blood, and to its thickness, by both of which the head is affected. But both these defects are corrected in the course of training, and giddiness is prevented *.

Its beneficial effects upon the stomach, is proved by the appetite, which becomes much sharper by training. Persons trained are generally costive; because the food must not be of an opening quality; but as so much matter goes off by perspiration, other evacuations cannot be so abundant †.

The great object of training, however, is, to obtain the benefit of a free respiration, without which nothing great can be performed by man, or horse, or by any other animal ‡. Free and powerful respiration is a certain sign of good health §, and is essential to a fresh colour of the face, to lively spirits, to cheerful feelings, and to the healthy and vigorous actions of the body ||. Training always appears to improve the state of the lungs, or to *improve the wind*, as it is said; that is to say, it enables a person to draw a larger inspiration, to hold his breath longer **, and to recover it sooner, after it is in a manner lost. A man is said to have *a good wind*, when his power of respiration, and continuing the active part of a boxing-match, lasts long; and a bad wind, when he is soon disabled by the fatigue of personal exertion ††.

There is no part of the body, on which training has greater influence, than upon the skin. Clearness of the skin, is the best proof of a man being in a good condition; and the state of the skin, is the criterion by which amateurs judge of a person being fit for exercise. During a course

---

* P. 96.

† P. 96, and 100.

‡ P. 137.

§ P. 145.

|| P. 87.

** P. 103.

†† P. 113.

course of training, the skin always becomes clear, smooth, well-coloured, and elastic; the veins are distinctly seen through it *; and when the hand of a person in a high state of training is held up against a lighted candle, the light appears to shine through it †. Even the skin of a fat man, when he becomes lean by training, does not hang loose about him, but becomes elastic and tight ‡.

The ancients seem to have paid particular attention to the state of the skin, and for that purpose made use of the warm bath and of friction; but as they were accustomed to anoint the skin with unctuous matters, with a mixture of oil and wax, and even with dust, it was the more necessary to take every means of removing § those impurities ‖.

Training has a remarkable effect *upon the bones*, which get harder and tougher, and are less liable to be injured by blows or exercise **.

By training, the shape is much improved; the belly, in particular, is reduced, which is absolutely necessary for a more free respiration ††. This is particularly the case with horses, whose bellies, swollen with coarse indigestible food, eaten in great profusion, is drawn into half its size in the course of training ‡‡. The chest also is made more open; and it is a certain fact, that persons who are regularly and constantly exercised, as fencing-masters, &c. retain their appearance, carriage, and shape, to the last; which is much in favour, not only of their health, *but of their longevity*[*].

---

* P. 96, and 103. † P. 112. ‡ P. 97.

§ It is observed by Dr A. P. Buchan, that it is more necessary to attend to the skin, as those whose perspiration is free and copious, enjoy a remarkable exemption from pulmonary complaints; whereas a languid and inert condition of the skin, is necessarily attended with a diminution of cutaneous perspiration, to make up for which, a larger share may endeavour to escape by the lungs, and this increased effort, may well be supposed to lay the foundation of disease, p. 128.

‖ P. 119. ** P. 97.

†† P. 104. ‡‡ P. 90.

One singular effect of increasing strength is, that electricity has a much greater effect upon muscular and healthy men, than upon others, and more so than even upon children; the same quantity of electrical matter giving them a greater shock, probably owing to the greater resistance[†].

By these processes, the nature of the human frame is totally changed; and in the space of two or three months, the form, the character, and the powers of the body are completely changed, from gross to lean, from weakness to vigorous health, and from a breathless and bloated carcase, to one active and untiring[‡]; and thus the very same individual, who but a few months before became giddy and breathless on the least exertion, has his health not only improved, but is enabled to run thirty miles, with the fleetness of a greyhound; or, in a shortness of time hardly to be credited, to walk above a hundred; or, varying the object in view, to excel in wrestling, or to challenge a professed boxer[§].

13. *Effects on the Mind.*—The effects of training upon the mind are also of the highest importance. The stomach being cleansed, the digestion rendered better, the blood ameliorated, and every animal function improved, the consequences are, that the attention becomes more ready, the preceptions more acute, and the mental faculties not only brighter and more elevated[||], but are preserved longer

---

[*] P. 103.

[†] P. 99.

[‡] P. 92. According to the technical phrase, he becomes light and *corky*.

[§] Such are the effects of training, that the best cock, when undieted, is unable to encounter the worst that is dieted, p. 155.

[||] P. 87.

in old age [*]. The mind also becomes more courageous; corporeal sufferings are borne with patience, a command of temper, and a presence of mind are also acquired, and preserved undisturbed, amidst pain and danger [†].

14. *Whether the effects are permanent.*—How far such effects are permanent, is a point that is much disputed [‡]. The temporary excitement of great strength, for a particular purpose, is certainly not calculated for permanency [§]; but the state of health, after training, is always good, and not subject to complaints; and the acquired state of health would probably continue, if the system were persevered in. Many boxers indeed have lived long, or at least to the age of eighty and upwards; but many of the principal boxers have died young, owing to excesses of every sort, in which they are apt to indulge after the training is over. Were it not for that circumstance, and the injuries they receive by blows in the body, they would live long enough. Blows on the head are soon recovered [||].

It is also remarked, that running-horses, when trained, do not wear out sooner than other horses; on the contrary, they bear fatigue much better [**]. Nor does training game-cocks shorten their lives; on the contrary, they live longer than common poultry.

15. *Reduction of Strength.*—Having thus seen how strength can be acquired, it was thought that it would also be a de-

---

[*] P. 145.

[†] P. 132.

[‡] The ancient athletæ rarely preserved their vigour so as to be fit to appear in public for a longer period than five years, and they are represented by Galen as a short-lived race of men; but this may be attributed to their moral conduct; for when they were not under a course of discipline, they indulged themselves in every kind of drunkenness and debauchery, p. 122.

[§] P. 105.

[||] P. 98.

[**] P. 144.

sirable circumstance, to ascertain the nature and effects of a practice not unusual at Newmarket, and at other places where horse-racing is an object,—that of reducing the weight of horse-jockeys, that they may be enabled to ride particular horses, without loading them with too much weight; even a small addition making a great difference in the course of a race, the success of which depends upon swiftness. Persons pitched upon for that profession will, of course, be light and slender, but they are often under the necessity of reducing their weight considerably, and that at very short notice; sometimes in a week or ten days, to the amount of a stone and a half *, and sometimes even two stones, though that is reckoned a dangerous experiment †. This is effected partly by diet, but principally by great exercise, and violent perspirations. Their diet, in general, consists of a small piece of bread, and sometimes a little butter, with tea in moderation, for breakfast; fish, if it can be obtained, if not, a small piece of pudding, and less meat for dinner; tea in the afternoon, with little or no bread or butter; and no supper whatever. Instead of malt liquor, they take wine and water, one part wine, and two parts water ‡. Their exercise is very severe, consisting of a walk after breakfast, of from ten to fifteen or sixteen miles, loaded with five or six waistcoats, two coats, and as many pairs of breeches §. Those who do not like excessive walking, have recourse to Glauber salts ‖. Sometimes even more violent measures are adopted. Besides privation of food, and violent exercise, they are put between two feather-beds, placed before a great fire, or in a barrel, and sweated as much as possible**. Even strong, powerful, and healthy men, have thus ruined their health; and such practices may ultimately terminate, either in death, or premature old age.

---

* P. 158. † P. 145. ‡ P. 138.

§ P. 138. ‖ P. 139. ** P. 160.

The following observations, which have occurred in the course of this branch of the inquiry, it may be proper more particularly to state: 1. When privation of diet is carried to any considerable extent, the stomach, weaned from food by every means, will not afterwards receive or retain it, and the consequences are generally fatal. 2. Common jockeys, who have been accustomed to be thus wasted, stand it better than gentlemen, to whom such practices must be more unusual *. 3. It is hardly to be credited, how very soon jockeys, who have been thus wasted, recover their former state and weight †; and, 4. Several jockeys are known to have been frequently severely wasted, without being injured thereby ‡; and some of them have reached even an advanced age §.

On the Utility of such Inquiries.

On the whole, the subject of athletic exercises seems to be well entitled to more attention than has hitherto been paid

---

* P. 160. It has been observed, in regard to boxing, that persons in high life cannot be treated, when trained, (at least at first), exactly in the same manner as common men, from the indulgences to which they have been accustomed; nor are their frames, in general, so strong. Jackson, the celebrated trainer, observes, that they eat too many made dishes, and other improper food, and sit too long at table. They also eat too great a variety of articles, and drink too much wine. No man should drink more than half a pint of wine. They also keep irregular hours, and lie too long in bed, p. 98.

† P. 161. Buckle, the great rider, after severe wasting, has gained nine pounds in eighteen hours, p. 140. It is said, that a couple of glasses of good sherry, will increase the weight of a person severely wasted, nearly two pounds in the space of a few hours.

‡ P. 139. and 140. § P. 146.

paid to it, *in a medical point of view* *. Several gentlemen, who have been trained for amusement merely, declare, that they consider the science of boxing to be a most healthful, bracing, and manly exercise, and that the requisite training does a man good instead of harm †. To be trained to running or walking also, is most healthful, if judiciously gone about, and not carried to any improper length; and those who have been trained, never look better, than immediately after their walking matches ‡. The true cause, why persons trained to those exercises, are in general short-lived, certainly arises from their dissolute lives, after giving up their respective occupations, and commencing *idle men*, as they generally do.

There is reason also to believe, that, by training men in a regular manner to boxing, and other athletic exercises, without meaning to engage in any personal contest, not only the general health might be confirmed, but that many diseases might also be prevented. In regard to this point, the evidence is extremely important §. Jackson, the celebrated trainer, states, that by training, the skin always becomes quite clear, even though formerly subject to eruptions * :—That it always appears to improve the state of the lungs, and consequently must be useful in disorders affecting that organ :—That nervous disorders are always prevented by it :—That there never was an instance of a trained person being paralytic †:—That a course of training is an effectual remedy for bilious complaints ‡ ;—and that the gout may, in a great measure, by the same means, be prevented from recurring §.—These are certainly the assertions of a person, partial to the art he practises ; but whoever considers deliberately the facts and observations above stated, must be satisfied, that they are not so groundless as at first glance might be imagined. Indeed, how is it possible that the body, by training, could acquire such strength and firmness, as it evidently does, without undergoing a change, which must have a material effect, not only upon the whole frame, but also upon every individual particle of it ?

---

* For the advantages of fencing, see an intelligent Letter, by Henry Angelo, Esq. Code of Longevity, Vol. II. p. 163—4.

† Boxing puts in active motion all the members of the body; in parcular, both the hands and arms are equally employed in hitting and parrying.

‡ P. 161.

§ There is no instance, as yet, of any person being positively put in training for the sole purpose of recovering health; but it is known, that a gentleman, in a bad state of health, after living hard in London, has gone to the country, and by living in some respects according to the training system, has returned to London completely recovered. P. 98.

I trust it will appear, from the preceding observations, that these inquiries have not been useless, as they demonstrate, by the most irrefragable examples, the extraordinary alteration which may be effected, by a proper system, on the human frame ;—and more especially the effects which will result from a due attention to air, to diet, and to exercise ‖.

The advantage of such inquiries, Lord Bacon descried, with his eagle eye of philosophic intelligence ; and nothing now remains, but to apply the facts and observations which have now been collected, to practical use.

The first point to be considered is, whether it would not be advisable to train young men to boxing, fencing, and

athletic

---

* P. 100. † P. 102. ‡ P. 99. § P. 98. ‖ P. 123.

other athletic exercises; and to make it a much more general practice at our schools and universities than hitherto has been the case. There is every reason to believe, that by following such a plan, a foundation of health and strength may be laid in youth, that will be found of infinite consequence, in every future period of life.

It is also well worth consideration, whether the army in general, both officers and soldiers, ought not to be trained to some of these athletic exercises, and occasionally employed in them, with a view of strengthening their frames, and enabling them the better to sustain the hardships of war. The weight of the arms the latter have to carry, would then be no longer felt; and marching to a much greater distance than is usual at present, would not prevent their coming to the field of battle, in a state fit to encounter and to subdue an enemy.

Above all, these particulars are submitted to the consideration of medical men. Their enlightened minds must derive advantage from a series of facts and observations to which they have hitherto had but little access. In some cases where there exists a predisposition to gout or to consumption, perhaps the attacks of the disorder, may either be postponed, or its severity may be mitigated by the practices above explained; and there are other cases, where a course of training may remove complaints of a nervous or bilious tendency. It is not improbable also, that, under their auspices, new improvements may be made in these arts, the beneficial effects of which, both on the mind and the body, even in their present state, have, it is hoped, been already sufficiently demonstrated in the course of the preceding observations.

CHAP. V.

ON SLEEP.

It is certainly one of the most extraordinary circumstances connected with the state of human nature, that the same being, who at one time is lively, active, and full of thought, should, at another, become in a manner deprived of life, his eyelids closed, his limbs torpid, and with hardly any symptom of animation remaining. It is natural to inquire, why so many hours of life are thus devoted to inaction; what useful purposes can be answered by this daily change of activity into profound repose; and why man is exposed to the dangers attending on sleep, during which period, he lies in a helpless state, liable to be destroyed by the meanest and most despicable enemy?

How sleep is produced, or what are the immediate or remote causes thereof, cannot easily be explained; and as it is not necessary, in a work of a popular nature, to enter into such abstruse disquisitions *, it is therefore proposed, without any farther introductory observations, to proceed to consider the effects of sleep, and the advantages resulting therefrom, under the following general heads; 1. By sleep, the vital energy is renewed, which had been exhausted by former exertions. 2. The process of assimilation or nourishment goes on more perfectly. 3. The frame attains its proper growth. 4. Much acrid matter is expelled through the medium of perspiration. 5. The cure of disease, and restoration of health, are in many cases promoted. 6. The vigour of the mental faculties is renewed. 7. The extension of life is advanced; and, 8. An important addition is made to the pleasures of our existence.

1. *Sleep renews the Vital Energy.*—The fibres of the body cannot be acted upon unless they are in an irritable state. Where that irritability, or power of being excited, does not exist, they are inert and lifeless. During the day that irritability is exhausted by light, heat, sound, and above all, by bodily exercise and mental exertion. When exhaustion takes place, we should endeavour to repair the loss

---

* Those who may be desirous of entering into those philosophical discussions, may consult Haller, Darwin, and Garnet, by whom the phenomena of sleep are explained, perhaps as fully as the nature of the subject will admit of. Garnet, in particular, observes, that when we have been engaged in any exertion, either mental or corporeal, for some hours only, we find ourselves languid and fatigued, and unfit to pursue our labours much longer. If, in this state, several of the exciting powers are withdrawn, particularly light and noise; and if we are laid in a posture which does not require much muscular exertion, we soon fall into that state which nature intended for the accumulation of excitability, and which we call *sleep*. This is the method which nature has provided to repair the exhausted constitution, and restore the vital energy. Without its refreshing aid, our worn-out habits would scarcely be able to drag on a few days, or at most a few weeks, before the vital spring would be quite run down. How properly, therefore, has our great poet called sleep "the chief nourisher in life's feast." Garnet's Zoonomia, p. 191.

by retiring to a situation where, unmolested by light, heat, or sound, we may lie recumbent, without bodily motion, mental agitation, or any sensation either of pleasure or pain, until the irritable principle is again accumulated, and nature restores by sleep, that vital energy which the body had lost by its former exertions *.

2. *Promotes Assimilation and Nourishment.*—Lord Bacon's penetrating eye soon discovered, that the process of assimilation, or the completion of nourishment, was principally accomplished by sleep. When we are awake, this nice and delicate operation could not be effectually carried on, because the incessant action of the body and mind, being always partial and irregular, prevents the equal distribution of the blood to all parts alike, from which each fibre and filament receives that share or portion that suits it best. In sleep, when it is quiet and natural, all the muscles of the body, that is, all active powers which are subject to our will, are lulled to rest, composed and relaxed into a genial temporary kind of palsy, that leaves not the least obstruction or hinderance to the blood being transmitted to every atom of the frame; the pulse is then slower and more equal, the respiration deeper and more regular, and the same degree of vital warmth is diffused alike through every part, so that the extremities are equally warm with the heart. During such a state of comfortable repose, the nutritive particles, circulated by the blood, can certainly more easily attach themselves to the fibres of the body †.

---

* See Townsend's Guide to Health, Vol. II. p. 71; and Garnet's Lectures on Zoonomia, p. 191.

† Adair's Medical Cautions, p. 413. During sleep, those classes of motion which are more immediately necessary to life, as respiration, per-

3. *Promotes Growth.*—The necessary consequence of nourishment taking place during sleep is, that growth also must be thereby promoted. It has been ascertained by experiment, that young plants grow in the night time, which is generally their time of sleep; and there is every reason to believe that young animals follow the same rule. Hence, indeed, it is, that more sleep is necessary for children than for grown people; and, in general, it has been remarked, that a person is considerably taller when he rises in the morning, refreshed with sound sleep, than when he goes to bed at night, exhausted by the labours of the day. During sleep also, there is a manifest relaxation of the fibres, and the body becomes more plump, so that any ligatures, if close, are apt to become painful; and on that account, many persons find it advisable to loosen the collar, or any tight part of their dress when they go to rest *.

4. *Promotes Perspiration.*—In sleep, all the voluntary motions which are of an exhausting nature cease, but those that are vital and involuntary, which, instead of being exhausting, serve to recruit our strength, continue in full force; these are, the motion of the alimentary canal, on which nutrition depends; the motion of the heart, which distributes the blood to every part of the animated frame; respiration, which supplies the pabulum of life; and perspiration, by which the acrid matter in the body is expelled

---

spiration, the circulation of the blood, and those connected with digestion and nutrition, continue without interruption. Hence, though man in his sleeping state is a much less perfect animal than in his waking hours; and though he consumes more than one third of his life in this irrational state, yet is the wisdom of the Author of nature manifested even in this seeming imperfection of his work.—See Darwin's Zoonomia, Vol. I. p. 199.

* Collingnon's Inquiry into the Structure of the Human Body, p. 25.

ed. Indeed, during sleep, nothing passes through the pores but what is thoroughly digested, and fitted to be thrown off*.

The experiments of Sanctorius have fully demonstrated the superior efficacy of undisturbed sleep, in promoting the important secretion of perspiration; insomuch, that a person sleeping healthfully, and without any unnatural means to promote it, will, in a given space of time, as seven hours, perspire, insensibly, twice as much as one awake. Undisturbed sleep is so great a promoter of perspiration, that in the space of seven hours, from forty to fifty ounces of concocted perspirable matter are commonly expelled out of the body†.

5. *Promotes the Cure of Disease.*—In many diseases, securing sound repose ought to be a principal object with every physician. It is often a decisive symptom of recovery; and indeed many diseases cannot be cured if the necessary rest be wanting. Since the days of Hippocrates, sleep has been accounted a most desirable and welcome guest in fevers, diminishing the rapid motion of the blood, and rendering the body cooler. Sleep is also of great advantage in checking extraordinary evacuation: hence its utility in diarrhœas and bloody fluxes. The comfort which sleep affords to persons afflicted with gouty complaints, pleurisies, and consumptions, need not be dwelt upon; and in deliriums, and frenzies, it is certainly the most effectual means of restoration. On the other hand, in asthmas, dropsies, and paralytic disorders, it cannot be recommended,

---

* Townsend's Guide to Health, Vol. II. p. 71.

† See Medicina Statica, Sec. 4. Aph. 1. 2.

mended, beyond what is necessary for the restoration of nature *.

For the recovery of health after sickness, it is indispensably necessary to attend to regularity of hours, as well as the quantity of sleep. That balmy repose, which suspends the distressful sensations subsequent to ill health, can only be obtained, by habitually appropriating those hours to sleep, which nature has pointed out as the best calculated for that purpose †.

6. *Restores the Vigour of the Mental Faculties.*—Intense thought very speedily consumes the nervous power; and it requires longer sleep to recruit the strength, and replenish the spirits, when wasted by study, than even by severe labour ‡. By sleep also, those violent passions, by which the frame is so much agitated and exhausted, are appeased; and after a refreshing sleep, we can reflect on our disquietudes with a calm mind, and again reconcile ourselves to the troubles of life §.

7. *Prolongs the Extension of Life.*—Among the marks and symptoms of longevity given us by the famous Cardan, that of being naturally a long and sound sleeper, is considered to be one of the surest indications ‖. This may be

---

* Strother's Essay on Health, p. 370, &c.

† Adair's Medical Cautions, p. 417.

‡ Harper's Economy of Health, p. 20.

§ Willich's Lectures, p. 487.

‖ There are, however, exceptions to this rule, and one in particular, the authenticity of which may be depended upon, being transmitted to me by an intelligent friend, (John Gordon, Esquire of Swiney, in the county of Caithness.) In a letter written to me by that gentleman, in December 1802, he gives an account of James Mackay of Skerray, who died in Strathnaver in the year 1797, aged ninety-one. He was a strong robust man, about five feet six or seven inches in height. He was of a very owing to the physical effects of sleep, which retards all the vital movements, collects the vital power, and restores what has been lost in the course of the preceding day. Indeed, if great watchfulness, by accelerating consumption, abridges life, a proper quantity of repose must tend to its prolongation *.

An ingenious author imagines, that sleep has a tendency to prolong life in another way. He asserts, that the length of a man's life may be estimated by the number of pulsations which he has strength to perform. Thus, allowing seventy years for the common age of a man, and sixty pulses in a minute, for the common measure of pulses in a temperate person, the number of pulses in his whole life, would amount to 2,207,520,000; but if by intemperance he forces his blood into a more rapid motion, so as to give seventy-five pulses in a minute, the same number of pulses would be completed in fifty-six years, consequently his life would be reduced fourteen years †. There is certainly some foundation for this doctrine, though it cannot be carried to any great length. It is well known how much the body is wasted in fevers, when the pulse is quick; and watchfulness has the same effect. During sleep, it is admitted, that the pulse is slower and more regular. Hence, according to Barry's doctrine, the time devolved to repose ought not to be considered as totally lost. If, during eight hours

---

very cheerful disposition, and possessed a singular, neat, and concise species of wit. He was remarkable for the small quantity of sleep he required; and it is certain, that upon an average, during the whole year, he did not sleep above four hours in the twenty-four. His constitution was so strong and hardy, that neither wet, nor any thing else affected him.

* Hufeland's Art of Prolonging Life, Vol. II. p. 196.

† Barry on Digestion, p. 131.

hours sleep, the pulsations are diminished from seventy-five to sixty in the minute, life, on his principles, must be prolonged one hour and an half, for every eight hours sleep, estimating the pulsation, during the eight hours, at sixty, and during the time gained, when one is in motion, at seventy-five pulsations in the minute. But without dwelling longer on such ingenious calculations, it may be observed, that sleep, on the whole, when duly regulated, must tend to the prolongation of life, though to what extent cannot be accurately ascertained.

8. *Increases the Pleasures of our Existence.*—The continual change from profound sleep to active energy, is not only salutary, but, when each is confined to its proper bounds, adds to the pleasure of life *. Every morning we enter into a new scene, with renovated strength and delight; whereas, were there no interval from action, life, with the common cares attached to it, would become insipid. Hence the celebrated Kant has justly observed,—"take from man hope and sleep, and you will make him the most wretched being upon earth." How absurdly then do those reason, who imagine, that by taking as little sleep as possible, they prolong their existence. They may spend in a given period (say sixty years), *more hours with their eyes open*, but they will never enjoy *life*, in the proper sense of that word, nor that freshness and energy of mind, which are the certain consequences of sound and sufficient sleep, and which stamp a like character on all our undertakings and actions. Besides, if those who sleep well live longer, they will ultimately be able to do more than such as in-

---

* See Mackenzie's History of Health, p. 383. So gratifying is sleep, that it gives relief to the sharpest afflictions, and it may be considered as the chief solace of the wretched and the unfortunate. Turnbull's Medical Works, p. 131. Also, Willich's Lectures, p. 488.

crease their waking hours at the expence of their repose *.

Having premised these general observations, we shall now proceed to discuss the following particulars connected with this interesting subject :—1. The number of hours necessary for sleep. 2. The period best calculated for that purpose. 3. The nature of the room in which repose should be taken. 4. The sort of bed or couch. 5. The dress or clothing to be used on that occasion. 6. The proper posture for sleep. 7. The circumstances by which sleep can be disturbed or prevented. 8. The means of promoting sleep, when wanted. 9. On sleeping in the day-time, or after dinner ; and, 10. General rules respecting sleep ; more especially those connected with infancy, youth, manhood, sickness, and old age.

SECT. I.

Quantity of Sleep.

THE number of hours necessary for sleep, is a point which has occasioned much discussion. Some have proposed, that the twenty-four hours, into which the day is divided, should be thus allotted :—eight hours for business, labour, or exercise ; eight more for meals, pleasure, or amusement ; and the remaining eight for sleep.

The celebrated Alfred divided his time into three portions, of eight hours each : one of which was employed for the refection of his body, by sleep, diet, and exercise ; another was devoted to the dispatch of business ; and the remaining

---

† Hufeland's Art of Prolonging Life, Vol. II. p. 195.

maining third, to study and devotion*. The life of Alfred was of no extraordinary length, though he certainly accomplished great things whilst he lived; and he might probably have lived much longer, had he allotted a larger portion of his time to sleep, to diet, and to exercise; and a smaller share to study and business.

Indeed, nothing can be more absurd, than for any individual, who wishes to accomplish great things, to deny himself the advantages either of sleep or of exercise. I am satisfied, that any person can go through as much business as is necessary, for any considerable period of time, by an uniform application, at the rate of eight hours per day; which will leave abundance of time for both these essential articles. Let any one devote from seven to eight hours to sleep, and from three to four to exercise, and even four hours to meals and to amusement; and he will be enabled, from the refreshment which his body, his mind, and his spirits, thus receive, to do a greater quantity of business, and to study with more advantage, in the course of twelve months, than if he were to labour at his books for ten or twelve hours a-day, by which his health and spirits would probably be materially affected †. Wesley, who lived to be 88 years of age, has published some curious remarks, regarding both the quantity of sleep that ought to be taken, and the means of ascertaining the proportion that is necessary for each individual. He admits, that one measure will not suit all men; some require considerably more than others: neither will the same measure suffice even the same person,

---

[*] Hume's History of England, Vol. I. p. 97.

[†] The author has studied twelve hours a-day, for three months; but that was in the prime of life, and for a particular purpose; and he would not recommend it to any other person to try the same experiment, for any length of time.

person, at one time as at another. When a person is sick, or weakened by preceding illness, he certainly requires more of his natural restorative than he did when in perfect health; and so he will, when his spirits and strength are exhausted, by hard, or long-continued labour. Those who have attempted, therefore, to fix one measure of sleep, for all persons alike, do not understand the nature of the human body, so widely different in various individuals. Bishop Taylor, consequently, has very erroneously assigned only three hours in the four-and-twenty, as the general standard; and Baxter is almost equally mistaken, in supposing that four hours will suffice for any man, during the same period of time. Wesley justly observes, that whatever may be done by extraordinary persons, or in some remarkable cases, where little sleep has sufficed, yet that a human body can scarce continue in health and vigour, without six hours sleep in four-and-twenty. During his long life, he never knew any individual, who retained vigorous health, for a whole year, with a less quantity of sleep than this; and he has long observed, that women, in general, require a little more than men; perhaps, because they are commonly of a weaker habit of body. Six hours, therefore, is the standard which he recommends.

In regard to the means of ascertaining the quantity required by each individual, he relates the following experiment: He had been accustomed to awake every night about twelve or one, and lay awake for some time; he thence concluded, that this arose from his lying in bed longer than nature required. To be satisfied on this head, he procured an alarum, which awakened him next morning at seven, near an hour earlier than he had risen before; yet he lay awake again at night. The next morning, he rose at six; but, notwithstanding this, he lay awake the second night. The third morning, he rose at five; but, nevertheless, lay awake the third night. The fourth morning, he rose at four; and, lying awake no more, he, for a period of above sixty years, continued the same practice; and, taking the year round, he never lay awake for a quarter of an hour together, in a month. He adds, that, by the same experiment, (rising earlier and earlier every morning), any one man may find out how much sleep he really wants *.

An old Latin proverb inculcates the necessity of seven hours sleep in the four-and-twenty—

> Septem horos dormisse,
> Sat est juvenique senique.

But it is certainly wrong to apply the same rule to the young and to the old.

Cadogan's maxim is, not to lie in bed above seven hours in summer, and eight in winter †. Much, however, must depend upon the constitution and age of the individual; and some variations must occur, according to the temporary feelings and circumstances of each day.

Willich proposes, as the best means of spending the winter in good health, and in useful labour, to go to bed at eight o'clock, and to rise at three or four o'clock in the morning ‡; and such a plan, I understand, is not unusual at some foreign universities. Custom may reconcile us to many things; but I have no doubt of the superior healthiness, in the winter-time, of rising by daylight, and using candlelight at the close of the day; than rising by candlelight, and using it for several hours before daylight approaches:

---

* See the Duty and Advantage of Early Rising, a Sermon, on Ephesians, Ch. 1. ver. 16. by John Wesley.

† Dissertation on the Gout, p. 94.

‡ Willich's Lectures on Diet and Regimen, p. 489.

proaches: the eyes, at least, must be greatly benefited by the latter system.

On the whole, it is evident, that different ages and constitutions require different measures of sleep. From six to eight hours may be sufficient for youth or manhood, when the individual is strong and healthy; and from eight to nine may be allotted to infancy and old age. But the infirm are not to be limited; and the weaker any person is, the longer he ought to indulge himself in such a measure of sleep, as he finds, by experience, necessary for refreshment *.

It is proper to add, that nothing is more pernicious, than excess of sleep. It brings on a sluggishness, and dulness of all the animal functions, and materially tends to weaken the whole body. It blunts and destroys the senses, and renders both the body and mind unfit for action. From the slowness of the circulation which it occasions, there necessarily follows fatness, corpulency, a bloated habit of body, and a tendency to dropsy, lethargy, apoplexy, and other disorders. Hence *Galen* calls sleep *the brother of death;* and says, that nothing is more pernicious, where it is carried to excess †.

Wesley also attributes those nervous disorders, which have of late years become so frequent, to the custom of lying too long in bed. By *soaking*, as it is emphatically called, so long between warm sheets, the flesh is, as it were, par-

boiled,

---

* Mackenzie's History of Health, p. 383.

† Valangin on Diet, p. 291. In p. 294, this intelligent author relates the case of a young man, who, in consequence of too much sleep, and too little of exercise, died of an apoplectic fit, at the age of 23; and Boerhaave mentions the case of a physician, who, by too much sleep, lost his intellects, and perished in an hospital. See Townsend's Guide to Health, Vol. II. p. 77.

boiled, and becomes soft and flabby. The nerves, in the meantime, are quite unstrung; and all the train of melancholy symptoms, faintness, tremors, and what are called lowness of spirits, come on, till life itself is a burden. He relates the case of a young person, who was completely cured of a train of nervous disorders by early rising, accompanied with cold bathing, and moderate exercise. Wesley adds, that lying too long in bed occasions weakness of sight; and that though, when young, his own sight was remarkably weak, yet, as he grew old, it became stronger, owing to his practice of early rising.

SECT. II.

The Time proper for Repose.

THE night is evidently the proper time for sleep; and, before the invention of artificial light, necessity enforced the rule of going to bed with the sun, and rising when that luminary again made its appearance. It is universally admitted, that sleep ought to be taken when the sun is down; but it is a rule that would not be at all calculated for every climate, to be in bed during the whole time the sun is invisible. For instance, on the day, and in the city, in which this paper is printed, (namely, at Edinburgh, on the 15th of January 1807), the sun sets at 45 minutes after three in the evening, and rises 15 minutes after eight in the morning, making a space of 16½ hours of night. On the other hand, on the 19th of May following, the sun will rise at 45 minutes after three, and set at 15 minutes after eight, making a period of daylight of a similar extent. Hence, such a rule can only be calculated for climates where the days and nights are more equal and regular *.

The advantage of sleeping in the night, instead of the day, is strongly proved by an experiment made by two colonels of horse in the French army, who had much disputed which period of the day was fittest for marching and for repose. As it was an interesting subject, in a military point of view, to have it ascertained, they obtained leave from the commanding officer to try the experiment. One of them, although it was in the heat of summer, marched in the day, and rested at night, and arrived at the end of a march of 600 miles, without the loss of either men or horses; but the other, who thought it would be less fatiguing to march in the cool of the evening, and part of the night, than in the heat of the day, at the end of the same march, had lost most of his horses, and some of his men †.

It has been justly observed, that nature certainly intended exercise for the day, and rest for the night. As soon as the sun quits our part of the globe, and the atmosphere we breathe in is divested of its enlivening rays, our nerves and

---

* It is impossible to lay it down as a constant rule, to labour during the day, and sleep during the night; for if that plan were adopted, such is the variation of the different seasons of the year, we should be always changing the plan, and would observe no regularity. Strother's Essay on Health, p. 359.

† Valangin on Diet, p. 276. He adds, that in order to prove the advantage of sleeping in the night, and reserving the day for labour and action, we need only compare the looks and the healthy state of people in the country, who follow that plan, with those of the inhabitants of towns, who keep awake till midnight, and pass a proportionable part of next day in sleep, and who are always wan, pale, and often ailing. Many persons allege, that by going to bed at regular hours, they must exclude themselves from all fashionable society, but as Adair justly observes, they have the alternative, either to be fashionably invalids, or out of fashion and in health. Medical Cautions, p. 418.

fibres become relaxed, our voluntary muscles lose somewhat of their contracting force, and we find, as it were, a natural propensity to rest. But if, running counter to the laws of nature, whether by exercise or by rioting, we keep up, during night, the contractions of our voluntary muscles, and the tensions of our nerves and fibres, at a time when they should be relaxed, and endeavour to relax them in the daytime, when they should be contracted, we disturb the whole economy of our bodies, by which health must ultimately be destroyed. The young are therefore apt to fall into consumptions, hectic fevers, or other acute disorders, whilst those advanced in years, become victims to the more lasting torments of a chronical disease *.

The plan of going to bed early, and rising betimes, has been called the golden rule for the attainment of health and long life, and a maxim which supersedes a variety of other precepts †. It is sanctioned by various proverbial expressions ‡; and it is said, that when old people have been examined, regarding the causes of their long life, they uniformly agreed in one particular, that they went to bed early, and

---

* William's Advice to People afflicted with Gout, p. 13. The absence of the sun, and that revolution in the atmosphere with which it is connected, certainly has a considerable effect upon the body, and any pernicious effect is best obviated by remaining during that period in repose. Those who follow a different system, by converting the day into night, and night into day, generally suffer severely for their imprudence.

Another circumstance to be considered is, that by the custom of sitting up late at night, the eyes suffer severely, day light being much more favourable to those delicate organs, than any artificial light whatsoever.

† Buchan's Demestic Medicine, p. 89.

‡ For instance,—*surgere dilucolo saluberrimum est*,—or, to rise by times is most conducive to health; also the doggrel rhymes so often repeated,

Early to bed, and early to rise,
Makes a man healthy, wealthy, wise.

and rose early. Without being an advocate for what are called fashionable hours, which are carried to so preposterous an excess, some doubts may be entertained regarding the propriety of carrying the opposite system to too great a height. In ancient times, when people depended almost entirely on the sun for light, they were under the necessity of rising with that luminary, and of going to bed when it disappeared. Hence, a prejudice arose in favour of that practice; but the case is greatly altered since the means of obtaining artificial light, to so great an extent, has been discovered. I question much, whether the morning air is so wholesome as many imagine. The sun must necessarily extract from the earth, when it first appears, a variety of vapours*, which strong constitutions may withstand, but which must be injurious to weak ones: and even in large towns, it is some time before the morning fogs are dissipated. On the whole, late rising cannot be approved of; but very early rising is not probably so essential to health, as is commonly imagined. The greatest point is *regularity of hours*; and provided a proper proportion of sleep be taken, namely, from six to eight hours, it is of little consequence whether you go to bed at ten, eleven, or even twelve o'clock, though a later hour cannot be advisable.

Indeed, if the doctrine of early rising, as a general principle, were recognized as just, there must still be many exceptions to that rule. Weakly people, for instance, and those who have not been accustomed to active life, ought to be cautious of exposing themselves to the morning, as well as the evening fogs. For, independently of their chilling effect,

---

* Dr Lind states, that a clergyman in the Wolds of Essex, informed him, that early risers were the shortest livers; probably because exposed to unwholesome morning fogs.

fect, it appears from the experiments of Ingenhousz, that a noxious principle is emitted from plants during the night, though small in comparison with the quantity of vital air drawn from them by the influence of the sun. That influence, he found, however, had not its full effect, till the sun had been some time risen *.

On the whole, moderation in this, as well as in every other respect, ought to be observed. One may rise too early for health, as well as too late, and persons who live in the world must, in some degree, accommodate themselves to its usages †.

Sect. III.

The Bed-Chamber.

As the bed-chamber is a place in which we pass the greater part of our lives, we should pay greater attention to it than usually is the case. In discussing this branch of the subject, it is proposed to consider the following particulars:

1. The situation of the bed-room. 2. Its size. 3. The mode of ventilating it. 4. The temperature. 5. The fire place; and, 6. Miscellaneous articles.

---

* Code of Longevity, Vol. II. App. p. 47.

† Hume observes, that it is hard to tell, why, all over the world, as the age becomes more luxurious, the hours become later. Is it the crowd of amusements that push on the hours gradually; or, are the people of fashion better pleased with the secrecy and silence of nocturnal hours, when the industrious vulgar are all gone to rest? In rude ages, men have few amusements or occupations, but what day light affords them. Hume's History of England, Vol. IV. p. 464.

1. A bed-chamber ought not to be situated on the ground-floor; and an elevated apartment is particularly recommended, by Tissot, to literary and sedentary people. Some recommend, for the sake of coolness, its fronting the north; but others think it better, that it should be exposed to the early rays of the sun.

2. Our sleeping apartments should be airy, large, and lofty, and not small rooms or closets. Nothing can be more imprudent or absurd, than the conduct of those who have splendid houses, preferring to sleep in small apartments. The more airy a bed-room is, certainly the better.

3. A bed-chamber ought to be well ventilated in the day-time, as it is principally occupied in the night, when all doors and windows are shut. The windows should be kept open, as much as the season will admit of, during the day; and sleep will probably be more beneficial, in proportion as that rule is practised *. Indeed, nothing is more material, not only for invalids, but for persons in health, than the admission of a free circulation of air into their bed-chambers, by various ways, in different degrees, according to circumstances †.

---

* In towns, this rule is not to be carried to the same extent as in the country, where the air is purer.

† Dr Adair says, that this may be gradually effected in the following manner.—During the warm close weather of the summer, or autumnal months, the chamber door may be left open for a few nights, afterwards a part of the sash may be left open, but the current of air intercepted by the shutter; and as the person becomes more habituated to free air, the shutter also may be left open, and the current of air prevented, by dropping a window-curtain before it.

In the colder months, a window in an adjoining apartment may be left open, also a door of communication, opening or closing the shutter, according as the wind does or does not blow directly from that quarter. Chimney boards, as very great impediments to a free circulation, ought rarely to be admitted into any apartment, more especially into a bed-room. They are necessary, however, where smoke comes down the chimney from other vents.

Impure air is peculiarly inimical to the nervous system; it relaxes and enfeebles the general habit, and increases the irritability of the body; whereas, there is no means so likely to remove every complaint of that nature, as to pay the greatest possible attention to the quality of the air we breathe, both in the daytime and at night.

One of the best means of introducing fresh air into a house, or purifying the air of any particular apartment, is by means of ventilators. These were invented by the celebrated Dr Hales. This excellent contrivance consists of nothing but of small moveable wheels, made of brass or sheet iron, which are applied to some part of the window panes, and set in motion by the pressure of the external air. But instead of using ventilators, Dr Adair recommends, that the casements of all public rooms, and indeed of private houses, shall be constructed, so that the upper division shall slide down, and that a certain portion of them, according as the room is more or less crowded, be at least occasionally kept open. By thus promoting a free and constant circulation of air in every apartment, whether occupied or not, the internal and external air becomes nearly of equal temperature; the foul air, which is generated in close unoccupied chambers, and which adheres to the walls and furniture, will be carried off before it is accumulated; and the usual practice of airing rooms, by warming them with fires, and opening the windows, will be less, if at all, necessary.

It is proper, however, to observe *, that though pure air is

---

* See Adair's Medical Cautions, p. 62. where a case is described, which strongly tends to prove the justness of these observations. Some recommend admitting fresh air by means of Venetian blinds. This is only calculated for very hot climates.

is so necessary to health, yet, that great and sudden ventilation is dangerous. Keeping open, therefore, the windows of any bed-room during the night, ought never to be attempted, but with the greatest caution. A gentleman, active and hardy, and accustomed to a country life, accidentally slept in a room, where his servant had neglected to shut one of the windows, the consequence of which was, his being seized with a serious illness, from which he recovered with difficulty *.

4. It is imprudent to sleep in a very warm place, as it makes one faint, and relaxes too much the whole system. In such a case, the person lies in a bath of vapours, which the great heat causes to exhale from his own body †.

In regard to warmth, the temperature of a sitting room should not exceed 60° of Fahrenheit's thermometer; but that of a bed-room ought to be about 50°, as the medium temperature of our climate is between 50° and 55°.

5. Unless there is any apprehension of damp, a bedroom should rarely have a fire in it, as it has a tendency to vitiate the air, often fills the atmosphere with dust or ashes, and sometimes may be the means of setting the room, and indeed the house itself, in a blaze. If a fire is kept in a bed-chamber, the danger arising from a small room becomes still greater; and numbers have been stifled when asleep, by having a fire in a small apartment.

6. Those who live in hot countries, ought to be very particular regarding the place they sleep in. The apartment

---

* In Valangin's Treatise on Diet, p. 287, there is an instance of a young lady, of beauty, fortune, and great merit, on the eve of being married, who died of an inflammatory sore throat, which she caught, in consequence of a window in her bed-room being left open by mistake, in the heat of summer.

† Valangin on Diet, p. 285.

ment should be dark, shaded from the rays of the sun and moon, temperate as to heat and cold, and rather inclined to coolness than heat.

It is a good rule for those who are obliged, on account of business, to spend the day in close towns, to sleep, if possible, in the country. Breathing free air in the night time, will in some measure make up for the want of it through the day. This practice would have a greater effect in preserving the health of those who reside in cities, than is commonly imagined.

It is hardly necessary to observe, that damp bed-rooms ought to be particularly avoided, and that the putrid air which they often contain, may be in the highest degree noxious.

SECT. IV.

Bed, or Couch.

IN rude ages, man is easily accommodated with a situation for repose. Any smooth plot of ground, with a stone for a pillow, is sufficient for that purpose. Sometimes even such a pillow is reckoned too great luxury; and a story is told of a highland chieftain, who, in the course of some predatory excursion, was obliged, with his clan, to sleep in the hills, which were then covered with snow. He got up in the night, to see whether all was safe, and observed his son at rest, with a heap of snow, by way of a pillow, under his head. He roused the youth, and pointing with indignation at the heap, declared, kicking it from him, '*that he did not approve of such effeminacy.*'

The progress of improvement, in the article of beds, or couches for repose, may be worth tracing, as a curious object of inquiry.

In the poems of the celebrated Ossian, the original mode of sleeping is thus described :

> Connal lay by the sounding stream,
> Beneath a leafless oak.
> Upon a moss-clad stone,
> The chief of heroes reclined his head *.

When men began to shelter themselves in caves or houses, (and it is singular, that, in the Celtic language, both should have the same name, *talla*), it would be natural to sleep upon heath, grass, leaves, or straw, spread upon the ground, which was the first step to improvement.

In the houses of the Russian peasantry, there are no beds, but broad benches, on which they sit in the day time, and sleep all night. This is an improvement from the low floor.

In England and in Scotland, during the feudal period of our history, the proprietors of land lived in castles, which were not always accommodated with many chambers ; and where it was often necessary for the greater number of the inhabitants to sleep together in the great hall on straw, brought in for that purpose, and which was swept away next morning †.

---

* This is taken from the new translation of Fingal, drawn up by the reverend Thomas Ross, which, it is hoped, will soon be published, as it is infinitely superior to the version given by Macpherson, and more likely to give to the world a just idea of the genuine excellences of the Celtic bard.

† From the following account, given by Hollingshed, we may judge of the ancient mode of sleeping in England.—Our fathers, and we ourselves, have lain full often upon straw pallettes, covered only with a sheet, under coverlets made of dagswaine or hoperlots (I use their own terms),

It must have required a great deal of consideration, before what is called a bed, or a place solely appropriated for sleep, was invented; and at first it probably consisted of nothing but the frame or bed-stead, without top or curtains, and covered with skins, straw, or heath.

The next improvement would be, what are called *box-beds*, still common in many parts of Scotland; the top and the sides of which, and even the door, being of timber, they would be well calculated for houses, which were then more pervious to the weather, than they are at present.

The bed, according to the present fashion, mounted on pedestals, with a cover above, and surrounded with curtains, that could either be opened or shut, was derived from the east *, and thence gradually introduced, first into the southern and then to the northern parts of Europe †. The

---

terms), *and a good round log under their head instead of a bolster.* If it were so, that the father or the good-man of the house, had a matrass, or a flock-bed, and thereto a sack of chaff to rest his head upon, he thought himself to be as well lodged as the lord of the town. So well were they contented.—Pillows, said they, were thought meet only for women in child-bed. As for servants, if they had any sheet above them, it was well; for seldom they had any under their bodies, to keep them from the pricking straws, that ran oft through the canvas, and razed their hardened hides.—See Hume's History of England, Vol. IV. Notes, p. 462.

* The Greek beds were composed of girth bottoms, ornamented with quilts, coverlets, and probably with some sort of bolsters. There do not appear to have been any pavilions or testors; nor were curtains anciently used in Greece. Homer makes no mention of them. They undressed when they went to bed. Their bedsteads, even in the time of Homer, were ornamented with gold, silver, and ivory. In the army, the Greeks lay upon skins spread upon the ground; they covered themselves with carpets, or other stuffs which served for blankets; they afterwards had coverlets put above all.—Goguet's Origin of Laws, Vol. II. p. 386.

† Of these beds there are three principal sorts, 1. The English. 2. The French; and, 3. The *Polonaise*, with a dome top, calculated for state. I have seen abroad an excellent sort of bed. It was merely a couch, without

The climax of improvement, in regard to this article of furniture, was the pensile, or suspended beds of Asclepiades, which have already been taken notice of in the preceding chapter; and by which, if necessary, the person might be rocked to sleep.

The subject of the bed or couch, may be explained under the following heads: 1. The nature of the feather-bed and bolster. 2. The height thereof. 3. The bed-clothes. 4. The curtains. 5. Miscellaneous remarsk.

1. The materials on which any individual sleeps is an important consideration. The skins of animals destroyed in the chase, would probably be the first article that hunters would think of. Rushes, straw, and heath would naturally occur to husbandmen, and those who resided in the country; and are still general in many countries, as France and Italy. In cold countries, more warmth is necessary, and feathers were thought of. Indeed, so partial are they in many countries in the northern parts of Europe to feathers, that they actually sleep between two down beds, however strange such a circumstance may appear to those who have not witnessed it. But, on the whole, the invention of what are called hair-matrasses, is superior to every other, not overheating and relaxing the body, as feathers are apt to do *. They are particularly calculated

---

out a top, and the curtains were at three feet distance, making an alcove. The English bed might be much improved, by having the top separated from the rest of the bed, and a clear space between it and the curtains, for the admission of fresh air.

* The use of feather-beds, excepting in cold climates and seasons, is highly injurious. It is certainly hurtful in many diseases, and some are actually produced from that pernicious practice. Feather-beds imbibe the perspired vapours thrown out of the body; and unless they are frequently and carefully shaken, aired in the sun, and provided with a new covering, the noxious vapours thrown out of the body may be reabsorbed,

calculated for camp-beds, not being so apt to become damp.

The observations of Locke upon this subject are extremely judicious. He remarks, the bed should be hard for strengthening the parts; whereas, being buried every night in feathers, melts and dissolves the body, is often the cause of weakness, and the forerunner of an early grave. Warmth about the kidneys, the necessary consequence of sleeping on down-beds, is very apt to breed the stone, and to occasion other disorders. Besides, by being accustomed to sleep without too much attention to refinement and delicacy at home, a person stands a better chance of sleeping soundly abroad, where he may be often subject to inconveniences. Sleep is the great cordial of nature; and he is the most likely to obtain the full benefit of it, who can repose as soundly on a solid matrass, or even on hard boards, as on the softest beds of down or feathers *.

But though matrasses made of hair or straw, or of dried moss, where economy is necessary, ought to be preferred in hot countries, and in warm seasons of the year; and though a proper elastic couch is more bracing than either the most exquisite down of Norway, or the most powerful tonic, or strengthening remedies that can be taken internally †; yet the rule is not without some exceptions.—In northern climates, where they are much accustomed to use feather-beds in winter, bad consequences have arisen by exchanging them for matrasses during the cold season of the year; and it has been found very apt to call forth gouty

---

ed, to the great injury of the health. Indeed, such beds should be exposed every morning to the open air, before they are made up.

* Locke's Treatise on Education, sec. 22.

† Willich's Lectures on Diet and Regimen, p. 496.

gouty or rheumatic affections in those who have a tendency to such complaints.

In regard to the bolster, it should be well stuffed and elastic. Some recommend that it should be filled with feathers in winter, and with horse hair in summer; but others contend, that it should be always stuffed with horse hair, as it is proper to keep the head cool.

2. Several matrasses or feather-beds are laid, one above the other, in order to raise the couch to the height that is required; but the modern fashion, by which it is necessary to ascend the bed *by steps*, is absurd and dangerous. The atmosphere you breathe is the same; and it must be attended with some hazard, ascending or descending, more especially for the aged, or for invalids. Many accidents have happened, of persons tumbling out of bed, and dying in consequence of the fall; which ought to have put an end to so preposterous a custom.

3. It is highly improper for young people to sleep in beds overloaded with clothes. They heat the blood more than is consistent with health; and produce an immoderate and enervating perspiration, which still more weakens the organs, already relaxed by sleep *. But, in regard to old people, warm bed-clothes are highly proper and necessary, in order to preserve or increase their heat. From neglecting to attend to that circumstance in very cold countries, the aged have often been found dead in their beds in the morning, after a cold night. Macklin, the player, when he got old, always slept in blankets, for the sake of warmth; and the late Dr Chovet of Philadelphia, who lived to be 85, slept in a baize night-gown, under eight blankets and a coverlet, in a stove-room, many years before he died †.

---

* Willich's Lectures on Diet and Regimen, p. 498.

† Rush's Medical Inquiries, p. 317.

In regard to bed-clothes:—the most comfortable discovery hitherto made, was the invention of sheets; by means of which, dress may be thrown off with comfort, and the body, almost in a state of nature, given up to repose: whilst by woollen coverings, or blankets, in number or thickness adequate to the warmth required, the body is kept in a proper and equal temperature. Nothing, however, has proved more injurious to health, than damp linen.

4. The use of curtains has been objected to; but they are in some degree necessary, to exclude the light, which, at least in the summer season, might discompose the slumbers at too early a period; and in winter they are useful, to exclude the cold. It should be a constant rule, however, either to have the curtains at the bottom open, for the admission of air, or the top of the bed taken off; or, at any rate, the curtains ought to be placed over chairs, so that they may not lie close to the bed, but that a free access of air may be admitted *.

The old custom, of warming the bed, deserves to be particularly reprobated; as it has a direct tendency to produce weakness and debility. It is still more dangerous, when done with a charcoal fire, the poisonous vapours of which must be highly pernicious. Those who sleep in a warmed bed, must be liable to feel cold as soon as the artificial heat is dissipated; whereas, any cold felt at going to bed is soon overcome, by the natural warmth of the body.

Where an attention to health is particularly necessary, beds, instead of being made up as soon as people rise out of them, ought to be turned down, and exposed to the fresh air, from open windows, for some time. This would expel any noxious vapour, and could not fail to promote the health of those who sleep in them.

---

* Willich's Treatise on Diet and Regimen, p. 499.

The bed should never be placed near a wall, more especially if there is any risk of its being damp, or in any country where lightning is frequent; for a flash of lightning, accidentally entering through the window, will take its direction along the walls, without touching any thing that is not close to them *. Concealed beds are extremely objectionable.

When travelling, we ought to be very careful and particular regarding our beds, which, at inns, and even private houses, are often damp and dangerous.

The greatest care ought to be taken to beat, and thoroughly to air any bed, in which sick persons have lain; and if any have died of contagious disorders, the beds in which they have lain ought to be buried or burnt †.

SECT. V.

On the Dress, or Clothing.

ORIGINALLY, people never thought of going to rest, but in their usual clothes; and it continues the practice in many parts of Asia, and other countries where the accommodation of beds is still in an imperfect state. Where blankets, however, are in use, excepting in the case of old people, the head and the neck are the only parts of the body which are usually clothed.

In regard to the head, it is much disputed whether it should be clothed warmly or coolly ‡. It was an old maxim,

---

* Willich's Lectures on Diet and Regimen, p. 501.

† Faust's Catechism of Health, p. 82.

‡ Cleland, in his Institutes of Health, p. 3. says, that to sleep bare-headed is a dangerous experiment; and contends, that it is necessary to keep the head warm, especially during sleep.

recommended for the preservation of health, to keep the head cool and the feet warm*. Notwithstanding of which, it is too prevalent a custom to sleep with warm night-caps, and to spend one-third of one's time in this unnatural manner. This certainly tends to make the head apt to catch cold on any sudden change of the atmosphere; and this unnatural warmth, must occasion fulness of blood, and other complaints †. This custom is highly prejudicial to children. Some cover to the head is necessary during rest, to prevent the hair from being tumbled about; but instead of a thick worsted, a thin cotton or linen night-cap, with a net to keep it close to the head, is infinitely preferable. Dr Rush, however, observes, that the heads of old people should be defended by means of woollen or fur caps in the night, otherwise they must suffer from it.

In regard to clothing in general, it is certainly proper to be undressed to the shirt, when we go to bed, not only for the sake of cleanliness, but also that the body may be relieved from every pressure and incumbrance, and a free circulation of the blood promoted; and instead of having the bed warmed, it would be more adviseable to wear a large commodious night-gown, of flannel or calico, to be thrown off when you get warm. The shirt-collar should be loose, the wrist-bands open, and neckcloths, if worn at all during

sleep,

---

* The celebrated Kant strongly objects to the doctrine of keeping the feet warm. He thinks, on the contrary, that both the head and the feet should be kept cool, by which one becomes less liable to catch cold; and that the feet should be daily washed with cold, instead of tepid water. The feet, however, should be kept dry, unless where people are frequently accustomed to have them wet. The Russians think that the breast also should be kept cool. It is universally agreed, that the belly should be kept warm, more especially in cold weather. See Code of Longevity, Vol. III. p. 248.

† Willich's Lectures on Diet and Regimen, p. 270, 497.

sloop, should be tied as loosely as possible. Persons who are chilly in the lower extremities, or are liable to pains in the stomach, may sleep in woollen socks or short stockings, in cold weather [*].

As to the neck, some are accustomed to lay aside their stocks or neckcloths when they go to bed. A contrary practice, however, is recommended by an intelligent correspondent, (the Chevalier Edelcrantz), in particular cases. Being liable to sore throats, he conjectured that it might be owing to his neck, which, in the day-time, was well clothed, and subject, by a continual motion, to great friction and transpiration, being at night uncovered, when, by suspension of motion, and currents of air, it was more exposed to cold than in the day, and much more so than the other parts, which are well preserved in a warm bed. He was thence led to use a thin collar of fleecy hosiery in the night, and somewhat thicker when the complaint returned, which was seldom the case [†].

Sect. VI.

Posture.

When about to sleep, most animals chuse a particular posture of body; and it certainly is a point that merits attention [‡]. We should not lie in a forced or constrained posture,

---

[*] Willich's Lectures on Diet and Regimen, p. 497.

[†] Code of Longevity, Vol. II. Appen. p. 27.

[‡] The camel places his head between his fore-feet; the monkey, like man, lies on his side; most birds sleep with their head under one wing. The psittacus garrulus, (a species of parrot), hangs by one foot, on the branch of a tree; and some spiders, and other insects, suspend themselves by

ture, but almost horizontal, the head excepted, which ought to be a little raised*. Nothing is more prejudicial than to lie in a manner half sitting. Sleep not on your back, *or in the posture of a dead man*, is a maxim attributed to Confucius. Hippocrates particularly condemns that posture, as likely to occasion the night-mare, the apoplexy, disorders of the kidneys, and other complaints. The opposite posture, on the stomach, is extremely injurious to the eyes, to the lungs, and to the bowels in general. The best position certainly is, to lie upon one side, the body straight, but the limbs bent, by which they are more at ease. When tired, our posture should favour those limbs which have been particularly exercised. Valangin recommends lying on the right side, when one goes first to bed, particularly when there is yet any food in the stomach; for it will then naturally fall to the bottom, and be more easily digested; but, after the first nap, or when the stomach is empty, to lie a little on the left side, changing postures when necessary; and every time you become awake, stretching yourself in bed, to render the circulation of the blood freer †.

The arms should be under the clothes in cold weather, or above them in warm; and care should be taken not to fold them round the head. It is imprudent to hide the head almost entirely under the bed-clothes.

We ought to sleep with our mouth shut. Besides other inconveniences

---

by their forelegs. Some horses never lie down, but sleep standing; and even those accustomed to lie down, will sometimes sleep on their feet.—Smellie's Philosophy of Natural History, p. 402.

[*] It is good to have the head higher than the rest of the body, lest the food, by rising too high in the stomach, should require a much longer time to be digested.

[†] Valangin on Diet, p. 288.

inconveniences attending a contrary practice, the teeth are likely to be injured by it; for the air, continually passing in and out between them, hurts, and by degrees loosens them. This practice has a tendency also to make the mouth and throat too dry, which is far from being desirable *.

Sleeping in a sitting posture should never be thought of, except for a short nap after a meal.

SECT. VII.

What prevents Sleep.

THIS branch of the subject may be divided into two parts; 1. What prevents our going to sleep; and, 2. What may disturb it afterwards.

1. We may be prevented from sleeping, either by improper diet, and bad digestion, or by violent emotions of the mind, or by occasional circumstances.

The drinking of tea, coffee, and any thin or weak liquor, immediately before going to bed, will, with many people, retard sleep.

A full stomach occasions restless nights; and that difficulty of going to sleep, so often ascribed to the vapours, is generally owing to crudities, which are undigested, and not carried off by proper exercise †. Whatever disturbs good digestion must injure sleep.

---

* See Hart's Diet of the Diseased, p. 337. He observes, at the same time, that when the mouth is open, vapours will be expelled by the breath, which have been accumulated in the stomach.

† Burton on the Non-naturals, p. 287.

The Chinese have paid very particular attention to the subject of sleep; and, among other maxims, strongly recommend, before we lie down, not to employ our thoughts with any circumstances that can shock the imagination, or leave impressions that may disturb our rest, such as tragical stories, disagreeable events that have lately happened in our family, or to our friends, and the like; for by these means sleep will be rendered unquiet, and perspiration, so necessary to health, will be stopped. Instead thereof, we should lull the heart asleep, and cast away every thought which may banish repose *.

Rest at night is often prevented by too intense an application to card-playing, or to study, or to any other exercise of the mind, when the object applied to is not varied, so as to give the mental faculties some relaxation.

Sleep may be disturbed by a number of incidental circumstances; as, 1. Noise. 2. Light. 3. Sleeping in a new apartment. 4. Having slept during the day. 5. Repelled perspiration, owing to being improperly covered with bed-clothes. 6. Cramp †. 7. Dreams. 8. The nightmare; and, 9. Somnambulism. The three last will require more particular discussion.

Dreaming.

The mind of man, when he is awake, is constantly receiving impressions from a multiplicity of external objects.

---

* It is said, that one's own pillow is the best of counsellors; and it is certain, that where any particular point requires deep and serious reflection, half an hour *in the morning*, may occasionally be devoted to the consideration of any important transaction; but the seldomer that such reflections are given way to, the better, and it should never become a general habit.

† The cramp in the calf of the leg, is a kind of convulsion, which generally

This ceases during sleep. The imagination, however, instead of being blunted by all communication with external objects being cut off, is, in many cases, whetted, becomes more active, and amuses itself with visionary scenes, or what are called *dreams*, which, however, are as characteristic of the genius or disposition of any individual, as his waking thoughts[*].

Some philosophers consider dreams, as often, not only amusing, but contend that advantage may be derived from them; that by them we may discover our real characters, and may ascertain the vices to which we are liable, and the objects which we ought to pursue[†]. Such speculations are ingenious; and it is certainly desirable to derive advantage from all the circumstances of life; but any person who can sleep soundly, would not be anxious to obtain either the amusement of dreaming, or any advantage that can be procured from it[‡].

---

nerally commences in sleep, occasioned by the continual increase of irritability from sensibility during that state of our existence. Darwin's Zoonomia, Vol. I. p. 211.

[*] Smellie's Philosophy of Natural History, p. 362.

[†] Ibid. p. 375.

[‡] Dreams are ably described, as comprehending all those thoughts which people feel passing through their minds, and those imaginary transactions, in which they often find themselves engaged when in a state of sleep. There is great uncertainty, with respect to the manner in which our powers of body and mind perform their functions in dreaming; but in general, it may be observed, that our dreams are affected by the state of our health; by the manner in which we have passed the preceding day; by the general habits of life; by the hopes which we most fondly indulge, and the fears by which our fortitude is most apt to be affected, when we are awake. Our dreams may therefore be applied to useful purposes. We may learn from them to correct many improprieties in our conduct; to refrain from meat, or drink, or exercises, which have unfavourable effects on our constitution; to resist, in due time, evil habits,

The Night-mare.

This affection, in general, is produced by indigestion, and by eating too much, and particularly of flesh-meat, at supper. It is likewise sometimes occasioned by having the head too low, or by lying, while asleep, on the back, and the bed-clothes, of course, pressing on the breast. From whatever cause the night-mare proceeds, it is uniformly accompanied with great terror, and a sense of suffocation. The sensations excited by this cause, are always of an excruciating nature. The imagination presents the ideas of some spectre, or demon, lying on the breast, or of situations which necessarily infer suffocation and death. When the sufferer attempts to throw off the load, or to escape from the impending danger, he discovers a total inability to move any of his members. This circumstance augments his terror and his pain, and at last banishes sleep. When he awakes, the imaginary weight, or cause of terror, is removed, and the power of motion is restored. But the palpitations of the heart, and the confusion of the brain, remain for some time, till the paroxysm is completely finished *.

Somnambulism.

---

that are stealing upon us; and to guard against hopes and fears, which detach us from our proper concerns, and unfit us for the duties of life. Above all, we ought to remember, that the sleep of health and innocence is sound and refreshing, and the dreams pleasing and delightful; whereas, a distempered body, and a polluted or perturbed mind, are haunted, during sleep, with dreams, impure, unpleasing, and frightful. See Encyclop. Brit. *voce* Dreams.

* Smellie's Philosophy of Natural History, Vol. II. p. 403. Darwin observes, that great fatigue, with a full supper, and much wine, is apt to produce this complaint. The remedies are—the use of the bark; to take little or no supper; and to sleep on a hard bed, with the head raised.

By

Somnambulism.

Some people, during sleep, retain the faculties of seeing, hearing, speaking, walking, laughing, crying, and, in general, are capable of doing almost every thing they are accustomed to perform, when they are awake. Many well authenticated instances are recorded of persons of that description; and, however incredible it may seem, to those who have not witnessed such scenes, there can be no doubt of their existence *. One of the most extraordinary cases is that of a young ecclesiastic, who, in his sleep, wrote, and even corrected his sermons by interlineation. It was found that his eyes were shut. He could not, therefore, see the characters he wrote †.

SECT. VIII.

Means of Promoting Sleep.

AN intelligent author has observed, that sleep, '*tired nature's sweet restorer*,' cannot safely be dispensed with for any length of time. If it does not pay its accustomed visit, the whole frame of the unfortunate individual is thrown into disorder, his appetite ceases, his strength fails, his spirits

---

By the hardness of the bed, the patient will be apt to turn himself more frequently, and will not be liable to sleep too profoundly, or lie too long in one posture. If it is necessary, he ought to be frequently awakened by an alarum clock. Zoonomia, Vol. II. p. 400.

[*] In Smellie's Philosophy of Natural History, p. 391, many instances are detailed of persons of this description.

[†] Adair's Essay on Diet and Regimen, p. 75.

spirits become dejected, and he is reduced to a state of the utmost misery. It is often in vain that every means are thought of to induce repose; it is in vain that all light is excluded, that all sounds are removed, that books of entertainment are read; the feverish body or the busy mind refuses rest:

> ' And, in the calmest and the stillest night,
> ' With all appliances and means to boot,
> ' Denies it to a king *. '

In the case of the celebrated Lord Lyttleton, as narrated by Dr Johnston his physician, the want of sleep seems to have occasioned his death; and Tissot proves, by a multitude of facts, that intense thought destroys an aptitude to sleep; and that it much imports studious characters to limit their learned labours to proper hours, to support their strength by intervals of exercise in the open air, and, above all others, to solicit sleep, by a seasonable dismissal of business and of care.

On account of the importance of this subject, it is proposed to give a general view of the various circumstances which contribute to sleep, under the following general heads: 1. Air. 2. Labour or exercise. 3. Diet. 4. Medicine. 5. Useful habits. 6. Resolution of mind. 7. Machinery. 8. Application of heat. 9. Application of cold. 10. Electricity. 11. Regularity of hours; and, 12. Miscellaneous articles.

1. Fresh air has a particular tendency to promote sleep: hence, people when travelling, not with too much rapidity, and with as much attention as circumstances will admit of to the regularity of their meals, generally sleep sound.

The

---

* Johnston's Medical Essays and Observations, Case VII. p. 232.

The advantage of thoroughly ventilating a bed-chamber, has been already discussed; and some ingenious physicians have recommended, as another mode of inducing sleep, that of diminishing the quantity of oxygen, and mixing a quantity of hydrogen gas, in the air of a bed-room *.

2. A sufficient quantity of muscular exertion, greatly contributes to sleep; more especially when it does not exceed the powers of the individual: otherwise, there must be a too violent circulation of the blood, and sleep will be interrupted †.

3. Attention to diet is also necessary for procuring sleep. The stomach must not be oppressed, nor ought the powers of digestion to have too much to do. Above all, heavy suppers, ought to be avoided; for, until the food taken is digested, it is in vain to think of sound or refreshing sleep. Some persons have accustomed themselves so much to take hot suppers, that they must be indulged in that respect; but the lighter they are the better; and they should always be taken two or three hours before bed-time. Some herbs from the kitchen-garden, more particularly the cabbage-lettuce, are favourable to sleep. Sanctorius recommends garlic

---

* Thornton's Philosophy of Medicine, Vol. III. p. 192. This may occasion sleep, but cannot be so wholesome, if the doctrine be true, that the chief refreshment of sleep arises chiefly from the oxygen, or vital air, imbibed by the system, forming a part of the digestive process then going on. Ditto, p. 186.

† One of the greatest advantages of exercise is, that it promotes sleep. A rich man, stretched upon a bed of down, shall seek for rest, but in vain; sleep flies from him, and refuses to close his eye-lids, in the stillest night: whereas the poor man, who has laboured all day, only throws his wearied limbs upon the bed, and straight he sinks into a sweet and gentle sleep; a sleep that is sound and uninterrupted, the just recompence of all his toil. St Chryst. Homil. 2, Popul. Antioch.; also Burton on the Non-naturals, p. 253.

garlic for that purpose, also marmalade made of quinces *.

4. Of all sedatives, opium is certainly the most sovereign remedy hitherto discovered; but, like other powerful medicines, when improperly administered, it becomes highly noxious to the human constitution †. It must occasionally be taken, however, when no other means of procuring rest is found to be effectual. It is also said, that narcotics, even outwardly applied, abate pain, and are favourable to repose.

5. A number of practices have been recommended, as likely to promote sleep; some to be observed before you go to bed, and some after.

There is not a better plan, than to walk up and down your parlour or bed-room some time before you go to bed. *After supper walk a mile, is an excellent rule, and may be observed in the house as well as out of it.* Walking about, before going to rest, particularly with pleasant companions, is infinitely better than lolling in a chair or couch, and certainly is a better preparation for repose. This maxim cannot be too often inculcated ‡.

Listening to music, also, is a good preparation for repose, or reading any book, not too interesting, containing simple ideas, which may rather tire by their uniformity.

The Chinese recommend it as an important rule, to wash the mouth, and to rub the gums and teeth with a brush, before going to bed. This gives the mouth and tongue an agreeable freshness; and, though the practice seems at first a little troublesome, you will soon become accustomed to it, will feel uncomfortable if it is omitted, more especially as it has a tendency to promote sound sleep.

---

* Medic. Stat. Sect. IV. aphor. 60.

† Thornton's Philosophy of Medicine, Vol. IV. p. 103.

‡ The celebrated Cato of Utica, was accustomed to walk about after supper, before he endeavoured to settle himself to sleep.

It is also considered by them as a healthy custom, and tending to promote sleep, when a person is undressed, to rub smartly with the hand, or flesh-brush, the soles of the feet, and then to rub each toe separately; this greatly promotes insensible perspiration, and is an effectual method of preserving and repairing the vital and animal spirits *. Indeed, there is not a better rule, than to have both the arms and legs smartly rubbed with a flesh-brush, before you go to bed, and when you rise in the morning.

Before going to bed, all pressure from any article of dress ought to be removed.

When in bed, some recommend sleeping on a pillow of hops, as an excellent mode of procuring sleep. This may be used occasionally, but would soon lose its effect.

It was formerly a custom, in the more remote parts of Scotland, to employ bards, to rehearse to great men the verses of distinguished poets; and, by these means, in some measure, the poems of the celebrated Ossian were so long preserved by oral tradition. It is sometimes a practice, when sleep cannot otherwise be obtained, to be read asleep. But, on the whole, it is a very bad custom, and, when once begun, can hardly be got rid of. Besides, it must occasion dreaming, and disturb sleep; as the ideas thus obtained are likely to wander and float through the imagination during the night †.

Boerhaave, on some occasions, in order to procure sleep for

---

* See the Art of Medicine among the Chinese. Code of Longevity, Vol. III. p. 236.

† Hufeland's Art of Prolonging Life, Vol. II. p. 199.

for his patient, directed water to be placed in such a situation, that it was continually dropping on a brass pan.

> Fontesque lymphis obstrepunt manantibus,
> Somnos quod invitet leves.

Any thing that catches the attention, for instance, soft music, or the Æolian harp, or any monotonous sound, as the murmuring of a rivulet, the humming of bees, the incessant sound or check of a clock or watch, will also promote sleep[*].

If none of these practices will procure sleep, then try the effect of conning over some task that in childhood was apt to induce it, or of counting to one thousand, or reciting any long passage, from any ancient or modern author. By these means, the attention is diverted from uneasy thoughts, and you are overtaken by sleep, in the midst of your efforts.

6. Much also may be effected by resolution and firmness of mind. A great modern philosopher, finding it impossible to procure sleep at the accustomed hour, and suffering also from painful attacks resembling cramps, he summoned up his stoic principles, and by directing his attention to some indifferent object, such as the history and writings of Cicero, not only got the better of the thoughts which kept him awake, but even his painful sensations soon became blunted, and were finally overcome by drowsiness; and this remedy, he adds, he could at all times repeat with success, whenever his sleep was interrupted by attacks of this sort[†].

---

[*] Code of Longevity, Vol. II. Appendix, p. 46.

[†] See Kant on the Power of Resolution over Disease. Code of Longevity, Vol. III. p. 152. Hufeland, Vol. II. p. 199, also observes, that the cares and burden of the day, ought to be laid aside with one's clothes.

7. Asclepiades, who rendered himself the delight of mankind by his exquisite inventions, in improving and assisting the art of physic, among other measures for that purpose, recommended, as has been already observed, the plan of *pensile, or suspended beds*, by which the patient was rocked asleep *.

The celebrated canal engineer, Brindley, often saw the experiment tried, of a man extending himself across the large stone of a corn-mill, and gradually falling asleep by the stone whirling round, before the stone had gained its full velocity. It would not be difficult to contrive circular beds or couches, that might be kept in motion for some time, on the same principle, and might answer the same purpose.

8. As disturbed or sleepless nights are very distressing, and often productive of disease, Dr Adair recommends it, as an effectual remedy, to bathe the feet, in a narrow tub with handles, so deep as to reach the knees, gradually increasing the heat, by adding boiling water, till a gentle sweat breaks out: the legs must be wiped quite dry, and a pair of worsted stockings put on. He recommends this as the best means of restoring natural rest, and particularly beneficial to studious men, and to those who are subject to frequent attacks of nervous headachs, colics, and rheumatic or gouty pains †. This practice might also be of use to old people in cold weather.

The

None of them ought to be carried to bed with us; and in this respect, one, by perseverance and firmness of mind, may obtain a great power over the thoughts.

[*] Suspended cradles, or *cots*, are already to be seen in the shops of the upholsterer. The beds might be contrived, so as to rest on a frame, when rocking was not necessary, and to be raised up by ropes when it was.

[†] Adair's Essay on Diet and Regimen, p. 74.

The body ought certainly to be kept in a due temperature and proper warmth, by bed clothes, &c. and some persons, more especially the gouty and rheumatic, have been benefited by sleeping in a flannel waistcoat, sliders, or drawers, though that is a practice not in general to be recommended.

9. The application of cold, is sometimes equally necessary as that of heat. Going cool to bed is in general to be recommended, more especially to persons in perfect health. The celebrated Dr Franklin had a custom of standing for a few minutes after he was undressed before he went into bed, and he believed that he thereby procured more refreshing sleep *. At other times, if he found himself restless, from feverish heat, or in a parched state of the body, he was accustomed to shake the bed-clothes repeatedly, to some height above the body, and even to get out of bed, and to take some turns about the room, till he became sufficiently cool. If the room be cold, both stockings and a dressing gown should be put on, and on returning to bed, a new part of it should be occupied. This, however, is not a recent practice, for Fuller, in his Medicina Gymnastica, (the fifth edition of which was published anno 1718), mentions, that some hysteric people, who have lain half a night restless and disturbed, and without the least inclination to sleep, upon getting out of their beds, and walking a turn or two about the room, found themselves quite altered, and able, when they came to bed again, to sleep well †.

10. Electricity is said to promote sleep, but it is only the gentler kind that tranquillizes the system. Many persons

---

* Adair's Essay on Diet and Regimen, p. 74.

† Fuller's Medicina Gymnastica, p. 44.

sons have slept much better at night when they have used an electric bath in the day time; and those who complain of the want of sleep, should apply that bath, for a quarter of an hour or longer, some time before they go to bed, until they get a habit of sleeping [*].

11. It is a great point, to get into a regular habit of sleeping. Those who accustom themselves to sleep, and to get up at a fixed hour, will generally be visited by sleep about the usual period. This habit also tends to render sleep much sounder [†].

12. In regard to miscellaneous particulars, the exclusion of light, the absence of noise, and attention to the best posture for sleeping, are principally to be recommended.

By an observance of these rules, as the circumstances of the case may render it necessary, sleep will be properly enjoyed, the strength of the body well renewed, and the faculties of the mind and body rendered spirited and active, at the morning of each day [‡].

These hints may contain several particulars, seemingly of little importance, but insignificant as they may appear, they ought not to be neglected, if they contribute to the preservation of health.

SECT. IX.

Of Sleeping in the Day-time, and more especially after Dinner.

IN many southern climates, it is a common practice to

take

---

[*] Struve's Asthenology, p. 363.

[†] Darwin's Zoonomia, Vol. I. p. 455.

[‡] Turnbull's Medical Cautions, p. 131.

take a nap, sometimes in the middle of the day, or at other times immediately after dinner; for they dine very early. *Homer* says, that *Nestor* always slept a little after his meals. *Galen* allows it to old people *. The Salernian school, however, strongly object to this custom, and, if it is at all indulged in, think the sleep should be short †.

The friends to the custom of taking a nap after dinner, tell us, that the wholesomeness of that practice is dictated by nature, provided it be not carried too far, since all animals appear sleepy after meals ‡. It has been also urged, that numbers of persons who have enjoyed perfect good health, have always been in the habit of sleeping an hour or two in the afternoon. Most of the religious orders in Spain follow that practice, and yet are not in worse health than laymen §.

Both Sanctorius and Lister recommended an hour's sleep after dinner, to those who have a weak digestion; and an instance is mentioned, by an intelligent physician, of a near relation he had, who slept after dinner for the last fifty years of his life, and died at the age of eighty-two ||.

But, on the whole, sleeping after dinner is not to be recommended, unless where nature seems to require it; and even then, it should only be indulged in for a short time, and

---

* Valangin on Diet, p. 280.

† Sit brevis, aut nullus, tibi somnus meridianus. It is very likely to prove injurious to those who are of a plethoric habit.

‡ Valangin on Diet, p. 282. Platerus, a famous physician, who lived above seventy years free from disease, was accustomed to take a nap after dinner, and recommended it to his patients.

§ Father Feyjoo's Rules for Preserving Health, p. 89.

|| See Adair's Medical Cautions, p. 417. But the doctor recommends it as a more salutary expedient, never to take so much food as to create a propensity to sleep at that time of the day.

and in a sitting posture, as that has a tendency to prevent its being carried to any excess *.

Sect. X.

General Rules regarding Sleep.

This branch of the subject may be considered under the following general heads; namely, rules regarding sleep: 1. In infancy and youth. 2. In manhood. 3. In sickness. 4. In old age; and, 5. Miscellaneous articles.

1. *Infancy and youth.*—The celebrated Locke has explained, at some length, his sentiments as to sleep, more especially the rules that should be observed regarding the sleep of children. He justly recommends their being permitted to sleep to their full satisfaction, as nothing contributes more to their health and growth; but insists on their being accustomed to rise early in the morning, as being, in various respects, essential for them. But though they should be regularly called up at an early hour, yet great care should be taken in waking them, that it be not done hastily, nor with a loud or shrill voice, or any other sudden violent noise. This often affrights children, and does them much harm †.

Children should, for some time, sleep on their backs, but

---

* Mackenzie observes, that a man should forbear to sleep after dinner, or indeed at any other time of the day, in our cold climate, except where a long habit has rendered such a custom almost natural to him; or where extraordinary fatigue, or want of rest the preceding night, obliges him to it; in which case, he should be well covered, to defend him against catching cold. Hist. of Health, p. 385.

† Locke's Treatise on Education, Sec. 21.

as soon as they get teeth, and begin to live on more substantial diet, and their bones and ligaments become stronger, they should be laid to sleep, sometimes on the one side, and sometimes on the other, that both may grow alike, and become equally strong.

The cradle in which a child is put, ought to be turned directly to that side of the room from which the light comes otherwise he will be in danger of learning to squint*.

Weakly children ought to be accustomed to a hard bed, and a slight covering, and the body will be thereby invigorated. It is particularly to be observed, that feather beds are more injurious to the health of children, than even of adults †.

Sleep is so great a refreshment to children, that we see new-born infants, when they are well, are almost always asleep; but if their sleep is frequently interrupted, soon they become lean and emaciated, and lose their strength ‡.

2. *Manhood.*—All the observations in the former part of this chapter, are principally calculated for manhood, or middle age, it is therefore unnecessary to recapitulate any of them in this place.

3. *Sickness.*—Sleep is of infinite advantage to the sick; for it greatly repairs their strength, helps to concoct and expel the morbific matter, and eases their pains §.

Invalids, whether from weakness, or fatigue, often express an inclination to sleep for an hour during the day;

---

* The Nurses Guide, with an Essay on Preserving Health, p. 46.

† Faust's Catechism of Health, p. 81.

‡ Valangin on Diet, p. 271.

§ Ibid. p. 272.

and this indulgence may be granted them, if it is found that their sleep, during the night, is not thereby interrupted.

Many real or imaginary invalids lie long in bed in the morning, to make up for any deficiency of sleep in the night time; but this ought not to be permitted, for the body must necessarily be enervated by long continuance in a hot and foul air. A little resolution will enable invalids to surmount this destructive habit. By rising early, and going to bed in due time, their sleep will become sound and refreshing, which otherwise they cannot expect.

Want of sleep is a most distressing, weakening, and dangerous symptom, in a multiplicity of diseases. The causes of morbid irritation, which produce and support this dreadful evil, are many and complicated; and it is of the utmost consequence, that the true cause should be ascertained. In no instance do ignorant practitioners err so much, or so frequently, as in cases of this kind *.

4. *Old Age.*—Sleep was intended to recruit nature, and to restore the wasted spirits. This is necessary to all persons, *but is most essential to the aged*, because they can least bear any waste or exhaustion, and they may indulge more in it than younger people, or those who are in the prime of life. In this respect, indeed, they may be considered as children a second time. Instead of eight hours, therefore, ten may be allowed them, provided they sleep the whole time, and are not corpulent.

If, owing to any agitation of mind, a person advanced in years, finds himself unable to sleep as well as usual, he ought, notwithstanding, to rise at his accustomed hour; and next evening let him take the warm bath, and a glass of wine extraordinary, and he will enjoy a sweet slumber,

---

* Adair's Natural History of the Human Body and Mind, p. 53.

and will not suffer from his former watchfulness. This is a much better plan than lying in bed in the morning, to make up for last night's want of sleep, which may lead to a very pernicious habit, which it may be difficult to conquer.

By getting into a regular habit, in regard to hours, (which old people have no excuse for breaking through), life may be as much enjoyed in old age, as even in youth, and perhaps even more so; *but then it is necessary to attend to a number of minute circumstances*, which may be overlooked, in the heyday of youth, but cannot be neglected in old age, with impunity *.

Persons advanced in years, may sleep a little after dinner, that their heat, which is weak and feeble, being retired within, may enable them to perform their digestion better; but their afternoon's sleep ought not to be continued too long, for fear it should prevent their sleeping in the night, which is of much more advantage to them.

5. *Miscellaneous rules.*—A Chinese philosopher, who had paid particular attention to the art of preserving health and long life, drew up a regular system for that purpose Among the rules therein laid down, one of the most important is, not to sleep till two hours after any meal. Indeed he contends, that walking a little after meals facilitates digestion. He also recommends the following maxims: Not to sleep, if you can avoid it, in the open air, or when the ground is moistened by dew; or upon cold stones; or in a damp place; nor upon beds or chairs that are varnished; or on chairs or stones heated by the sun; as such indiscretions occasion colds, palsies, and other disorders †.

---

* The Old Man's Guide to Health and Longer Life, p. 33.

† See the Art of Medicine among the Chinese. Code of Longevity, Vol.

In regard to sleeping in the open air, we see many common people, particularly in the country, take a very considerable nap upon the grass, in the daytime, without any inconveniency. But those who are not accustomed to that practice, are liable to catch cold, if they happen to fall asleep even on a garden-bench; for the system becomes warm during sleep, and if a current of cold air affects any part of the body, a torpor of that part is necessarily produced *.

But it is still more unwholesome to sleep in the open air *during the night*, and few can do it without injury to their health, unless they had been accustomed to it. In these climates, the night is, in general, too cold; and in hot countries, as on the coast of Guinea, the dews that fall are so extremely noxious, that it is accounted certain death to sleep all night in the open air †.

Sleeping in a carriage is not much to be recommended, and many have suffered severely by sleeping in that state with a window open.

The following miscellaneous rules may, in various circumstances, merit attention: 1. It is an indispensable rule, that fat people should avoid soft beds, and should sleep little, and rise early, as the only chance they have of keeping their bulk within due bounds. 2. It is a good rule, to lock the door of your bed-room previous to going to rest, so as to prevent your being suddenly and hastily roused by any person coming into the room; and you should also examine

---

Vol. III. p. 236. It is said, that Confucius made it a law to himself, not to speak after he was in bed; but this, for obvious reasons, cannot be adopted as a general rule.

* Darwin's Zoonomia, Vol. I. p. 213.

† Valangin on Diet, p. 287.

the room carefully, that no cat, or dog, or any other animal, may disturb your sleep, the alarm of which may be highly injurious. 3. It often happens, that if a person has not slept very well, he feels a weariness in the morning, which is best removed by exercise; for that weariness must have been occasioned by an obstruction of some indigested perspirable matter, which by exercise may be rendered fit to pass the pores. 4. Many people are perpetually subject to colds and coughs, if they sleep in a less warm head-dress, or thinner night-cap, than they have been accustomed to. Any risk of that sort ought to be carefully guarded against. 5. Such persons as are subject to cold feet, ought to have their legs better covered than the body, when they are in bed. 6. As the body is excited by light, hence darkness is necessary for repose; and fires in the room, or lamps, or candles, or admitting the morning light, ought to be avoided*. 7. We should never suffer ourselves to dose, or fall asleep, before we go to bed, as it must greatly diminish any chance of getting repose, when we wish for sleep. 8. Some sleep with their eye-lids open, like hares, who are led to do it in consequence of their timidity; but this practice is not to be approven of in men, because dust may get into the eyes, and the light in the morning may become so powerful, as to interrupt sleep. 9. There is not a more pernicious custom, than that of reading in bed, even in the day time; such a practice strains the eyes; but by candle light it is still more injurious; to which is to be added, the danger of having the bed set on fire, and not only suffering a cruel death one's self, but being perhaps the source of infinite mischief. 10. At public schools, where great numbers of children sleep together, the utmost attention ought to be paid to the nature of the beds, the bedding, the airiness of the apartment, and every thing that can prevent the bad effects of crowding numbers together, and compelling them to breathe a confined and vitiated atmosphere. 11. Those whose sleep is apt to be interrupted by slight causes, should nevertheless keep themselves quiet, and warm in bed, with their eyes shut, and without tossing or tumbling, and this will, in some degree, answer the purposes of more sound repose *.

---

* No fire, candle, or rush-light, or lamp, should be kept burning during the night in a bed-room; for it not only vitiates the air in a very considerable degree, but also disturbs and prevents the rest of those whose sleep is uneasy, particularly the aged. In a dark apartment, sleep generally comes on without much invitation; whereas, any light in the apartment, stimulates the brain, and consequently the whole nervous system, and dispels any tendency to repose.—Willich's Treatise on Diet and Regimen, p. 501.

On the whole, I am satisfied, that there is no habit that contributes more to good health and good spirits, or renders a man fitter to go through a great deal of labour, either of body or mind, than that of taking a sufficient quantity of sleep, from six to eight, and even nine hours, if nature requires it. I understand that the late Lord Mansfield frequently inculcated the advantages to be derived from a rigid adherence to such a system, (his maxim was, *cultivate sleep*), and it is well known, the quantity of business he went through, and the good health and good spirits he enjoyed for a great number of years. To continue long in bed, without sleeping, is weakening and injurious; but a person may take all the repose that nature requires, and will have time sufficient, during the remainder of the day, to go through all the necessary business, and to enjoy all the real pleasures of life.

---

* Mackenzie's History of Health, p. 384.

Such are the observations which I have collected regarding the interesting subject of sleep, a state in which generally one third, and sometimes more, of the life of every individual is spent, and on which the comfort and happiness of the remainder of our existence must, in a great measure, depend. Would it not be of infinite advantage to human nature, therefore, by the circulation of such a paper, in various languages, and countries, to have all the materials necessary for the thorough explanation of such a subject collected, and then thoroughly methodized, and carefully digested and condensed? A large proportion of the miseries of mankind may be attributed to an improper system, regarding their sleep. Some sleep too little, and, owing to that circumstance, they not only injure their health, but become prone to all the violent passions so injurious to those who indulge them. Others sleep too much, become unwieldy and lethargic, and perish before one half of that space of time, which they might have existed, has elapsed; and where the system of sleeping is not to be objected to, either in regard to quantity, or even the time when it commences, yet how many are there, whose sleep is disturbed and unrefreshing, from being too early after the preceding meal, or from lying in an improper posture; or from having neglected a variety of other rules, which have been explained in the preceding observations, and without which, healthy and sound repose cannot be expected. Indeed, of all the objects treated of in this volume, there is none, regarding which an attention to a proper system is more likely to be productive of the happiest consequences, than the subject of this chapter. Sleep is so natural to man, that, in almost every instance, it must be the fault of the individual, and his neglecting the rules necessary for that purpose, if he does not enjoy it, in that perfect state, which is so essential for his comfort and happiness.

CONCLUSION.

I HAVE thus gone through the various particulars, which, according to the original plan of the work, were considered as *essentially nesessary* for the comfortable existence of man, and in which is included, all the objects usually treated of under the ancient term of *the six non-naturals**. There still remain, however, several other topics of considerable importance, and the great department of medical police. But these it is proposed to reserve for some future opportunity. It would require, indeed, several months of labour and research, to discuss those subjects in the same manner in which the others have been explained; and another volume would be necessary for that purpose. How far it is adviseable for the author to engage in such an undertaking, must depend upon the reception which the present work meets with, whether favourable, or otherwise. Nothing but the prospect of public approbation, and the hopes of promoting general and individual advantage, would compensate for the labour of compiling a work, on a plan of so extended a nature, where it has often been found necessary to consult a hundred different publications, to explain the subject matter of one particular chapter; and sometimes to peruse a number of pages, for the sake of obtaining one or two useful observations.

From the specimens herewith exhibited, he trusts it will appear, though certainly a difficult, yet, by no means, an impracticable attempt, to condense human knowledge, regarding those points which are the most interesting to mankind in general, on the plan laid down in the introduction to the present work. It will require, indeed, either the protection of an enlightened government, or the aid of a public-spirited society, constituted for that special purpose; or, to remove every difficulty, the assistance of both. But were such a measure once fairly undertaken, *and a perfect specimen produced*, the advantages resulting therefrom, would appear in such glowing colours, that, by the universal concurrence of every enlightened mind, the undertaking would be carried on with such zeal and spirit, that no doubts could be entertained regarding its final accomplishment.

---

* The possessions of the mind are discussed in Part I. Chap. 2. p. 75.

APPENDIX.

I.

CAPTAIN COOK'S METHOD OF PRESERVING THE HEALTH OF HIS SEAMEN,

AND

DOCTOR WRIGHT'S DIRECTIONS TO OFFICERS GOING TO THE WEST INDIES.

CAPTAIN COOK'S METHOD MAY BE REDUCED TO THE EIGHT FOLLOWING RULES.

1. *The Crew to be at Three Watches* *.

THIS method is already practised in many ships of the navy, but such is the predilection for old forms, that this humane custom is far from being universally adopted. That a due proportion of sleep, adds to the health and vigour of the body, will readily be granted; on the other hand, nothing contributes more to the production of disease, than too little sleep, and that interrupted. At three watches, the men have time to shift and dry themselves, if wet; at two, the time allotted for rest being so short, they are prompted to rush into their beds in the wet condition in which they often come from the deck; and of what consequence it is to avoid going to sleep in wet clothes, is too obvious to need any comment, and comes home to the feelings of every capacity. When there is no pressing occasion, ought not a seaman to be refreshed with as much uninterrupted sleep, as a common day labourer * ?

---

* The crew of a ship of war are either at watch and watch, at three watches, or at four watches. At watch and watch, the working seamen are divided into two bodies, one off the deck and the other upon the deck;

2. *To have Dry Clothes to shift themselves after getting Wet.*

What has been observed on the foregoing head, will also apply to this; suffice it to say, that Captain Cook paid the strictest attention to this head, by directing some of his officers, to see that every man, on going wet from his watch, was immediately shifted with dry clothes, and the same method observed on their going to bed †.

3.

---

deck; they are relieved every four hours, until four o'clock in the afternoon, when there are two watches of two hours each. According to this plan, they will have alternately, one day eight hours sleep, and the other day four. When at three watches, they have, for two days, eight hours sleep complete, but every third day they are only allowed four hours sleep at once; and after a watch of four hours, called the middle watch, they have four hours more. Four watches are practised in harbours merely.

* It is true that some truly meritorious officers keep their people at two watches, and preserve them in a perfect state of health, but they are most rigid observers of every other part of this plan.

† The late Lord Mulgrave, in his voyage towards the north pole, on his

3. *To keep their Persons, Hammocks, Bedding, and Clothes clean and dry.*

That cleanliness conduces to health will not be denied. This humane commander made his men pass in review before him, one day in every week, and saw that they had changed their linen, and were as neat and clean as circumstances would admit. He had also every day the hammocks carried on the booms, or some other airy part of the ship, unlashed, and the bedding thoroughly shaken and aired, well knowing that, from the perspiration and breath of so many men below, every thing, even in the space of 24 hours, is apt to contract an offensive moisture. When the weather prevented the hammocks being carried on deck, they were constantly taken down to make room for the fires, the sweeping, and other cleaning operations. It may be proper to observe, that as the beds and blankets are ready receptacles for infection, too much pains cannot be taken in well airing and purifying them. When possible, fresh water should be allowed to the men to wash their clothes, as soap will not mix with sea-water, and linen washed in brine never thoroughly dries.

4. *To keep the Ship clean betwixt Decks.*

Little need be observed on this head, as his method of washing and scrubbing, is universally practised, *(perhaps too much)*, in every ship in the service.

5.

---

his men getting wet, used to give each a pint of porter, but they were first obliged to pass before him in dry clothes.

5. *To have frequent Fires between Decks, and at the bottom of the Well.*

On this head Captain Cook laid *the greatest stress*, without which every other effort would have availed nothing. But, in this particular, he took care that his orders should be scrupulously carried into execution. His method was to have iron pots with dry wood, which he burned between decks, in the well, and other parts of the ship, during which time, some of the crew were employed in rubbing with canvass or oakum every part that had the least damp. As moisture is acknowledged to be the great source of the diseases of seamen, by removing that cause, the effect must cease. The advantages of fire are no where more manifest than in sweetening the well, where the whole leakage, whether of the ship itself, or of the casks of spoiled meat or corrupted water, runs into. Yet this place, often so fatal to many, is now rendered safe and sweet, by means of an iron pot filled with fire, and let down to burn in it. The washing the ship between decks, however proper it may be in fine weather, ought *never* to be practised, but when there is sufficient time given for the fires to have rendered every part perfectly dry, before the men were permitted to return to their berths *. There may be some crevices or parts of the ship, where the heat from the stoves cannot readily absorb the moisture; in that case, logger-heads heated red hot, and laid on sheets of tin or iron, will speedily effect the purpose. It is unnecessary to mention every part of the ship that requires fires, such as the manger, orlop, cockpit, &c. as it will readily occur to the discerning officer, that where the least circulating air is, the more necessary it is for fires to extract the foul and stagnant vapour. Under this head it may be observed, that the men, being permitted to sit in the draught of air between the ports, when open on both sides of the ship, must ever be attended with danger. And although this custom is not allowed in many ships, yet its prohibition is far from being universal.

---

* When the great cabin, wardroom, or officers' cabins are washed, they are never occupied till dry. Ought not the same care be taken of the seamen's habitation?

6. *Proper attention to be paid to the Ship Coppers.* 7. *The fat boiled out of the salt beef and pork never to be given to the people.* 8. *The men to be allowed plenty of fresh water at the Ship's return to port; the water remaining on board to be started, and fresh water from the shore to be taken in its room.*

Little appears necessary to be observed regarding these particulars; in every ship, proper attention is paid to keep the coppers clean and free from verdigrease; and the people are not now permitted to use the fat boiled out of the beef and pork. On the head of having fresh water from the shore in room of what has been at sea, if time will permit, it is not doubted but it will always be done.

I thought it right, in this work, to preserve a short account of the whole system, which does so much credit to the memory of Cook. In consequence of his having adopted it, this celebrated navigator performed a voyage of upwards of *three years*, in every climate of the globe, with the loss of only one man by disease, and who had evidently symptoms of consumption before he left England. In testimony of the high idea they entertained of this happy discovery, the Royal Society, on the 30th November 1776,

decreed

decreed their prize medal to Captain Cook; and its President, (Sir John Pringle), on that occasion, justly remarked, "That if Rome decreed the *civic crown* to him who saved the life of a single citizen, what wreaths are not due to that man, who, having himself saved many, has also pointed out, and recorded the means, by which Great Britain may in future preserve numbers of her intrepid sons, who, braving every danger, have so liberally contributed to the fame, to the opulence, and the maritime empire of their country."

It is impossible to pass over the subject of sea voyages, without adverting to the numbers who are led to emigrate from this country, to warmer regions, in particular to the East or West Indies, and many of whom fall victims to the change. To persons advanced in life, such a change might not be unfavourable, but to those who are young and healthy, who are full of good blood, and who live upon animal food, and fermented liquors, the change is frequently fatal *.

As so many useful subjects of the crown of Great Britain are annually exposed to the dangers of such a change of climate, and very rarely know the precautions necessary to preserve their health in a new and untried situation, I was thence induced to request my worthy and intelligent friend, Dr William Wright of Edinburgh, to favour me with his sentiments upon the subject. I knew well, that, from his great experience of the climate, and diseases of the West Indies, he was likely to furnish many valuable hints to those who emigrated to a warmer climate. The following

---

* Valangin's Treatise on Diet, &c. p. 26. This author recommends that they should never think of removing from a cold to a hot climate without previous evacuation.

ing directions were originally intended by the Doctor, for the use merely of officers going to the West Indies, but in many respects they are equally applicable to other descriptions of persons, and indeed to all persons going from a cold to a hot climate.

Dr Wright's directions to Officers going to the West Indies.

1. Take your passage in a packet, a frigate of war, or in an armed ship with convoy, and let your berth or cabin be in a free and well ventilated part of the ship. Transports are often crowded with soldiers, and encumbered with women and children; and unless the most strict and rigorous observance of cleanliness is in the persons as individuals, and in the berths of the men between decks, the *ship* or *jail fever* will soon break out, first amongst the troops, then the seamen, and, lastly, among the officers themselves.

2. If you have not before made a voyage any where, it is probable you would get *sea sick*, which, while it lasts, is very distressing. I advise you at all times to sit in good air, and to be much upon deck throughout the day, and frequently to bathe the face in a bason of cold salt water. After each fit of vomiting, take a small bason of tea, water-gruel, or broth. Take sparingly of solid animal food, and abstain from spirits or fermented liquors for some days.

3. Here it is proper to take notice, that salt beef and pork are drained of all their nutritive juices. Living on such food exhausts the power and action of the stomach, and no proper supply of chyle enters the circulation. This, with lying in confined parts of the ship, never fails to produce sea scurvy, with all its direful consequences.

4. Costiveness must be prevented by attention to diet. Eat moderately of flesh meat, but with it plenty of vegetables. There is not a better nor more wholesome mess

at sea than peas soup, when seasoned with onions or celery seed; exercise upon deck is conducive to health in general; it strengthens the stomach and bowels; it promotes digestion, and enables every organ to perform its functions. Some mild laxative medicine may be taken now and then, as the aloetic pill of the shops.

5. While at sea, make a hearty breakfast of tea or coffee, with plenty of biscuit and butter. The same at five or six o'clock in the afternoon. Take nothing between breakfast and dinner, nor be prevailed on to partake of the *meridian bowl.* This palls the appetite, weakens the stomach, and occasions a confusion in the head.

6. Care must be taken that the live stock be regularly fed and kept clean, otherwise they will soon be in a diseased state, and die; or, if killed, not fit to be brought to the table.

7. Dinner, when on board of ship, or on shore, should consist of a due proportion of animal food and vegetables; no rich sauces, or highly seasoned food. Eat moderately, and always *rise from the table with an appetite.*

8. During dinner, take a glass of water, or good brisk small-beer. The absurd practice of drinking several glasses of wine, while eating, should be abolished: Three glasses of wine after dinner may be taken, or a draught of porter or ale; but a mixture of liquors never fails to disorder the stomach and head.

9. Supper. A slice of cold meat, and a draught of porter. Go to bed soon, and rise early. Wash your face and hands in cold salt-water.

A person who observes temperance, sleeps sound, rises refreshed, and is fit for any exertions of body and mind throughout the day. But the intemperate and luxurious are soon fatigued and debilitated; they are unfit for labour or exertion; they become peevish and fractious in their tempers; a burthen to themselves, and a curse to all around them.

10. On landing, keep out of the heat of the sun; or, when out of doors, wear an umbrella. For some time, walk at leisure, and use no violent exercise in the heat of the day. *When a man is fatigued, sickness is at hand.* In other words, he is liable to a remitting fever, to receive contagion from human subjects, or from marsh miasma of salt marshy grounds by the sea.

11. As forts and garrisons in the West Indies, are on the low lands by the sea, they are generally unhealthy. If you have a choice, take a house on a rising ground, remote from swamps, and well clothed with timber trees, and succulent plants.

12. Riding is a healthy exercise, especially before breakfast: and sea bathing is salutary, but remember, *never to bathe when you perspire, or when cold;* and you ought not to stay above one minute in the water at a time.

13. If at any time you are caught in a shower, keep in motion until you get to your own house, or that of a friend. Then get a complete shift of clothes to hand; after stripping, let your skin be well wiped with a dry towel: I by no means approve of rubbing the body with rum, as by it the pores are constricted, and a fever may be the consequence. The best cordial, in this case, is a warm bason of tea, coffee, chocolate, or broth, according to the time of the day. As you value your life, abstain from warm toddy, punch, or negus, unless this last is very weak.

14. There are a number of excellent fruits in all the islands; take care they are fully ripe; and eat a little of them at a time, in the morning or afternoon.

15. Strangers are much tormented with mosquitoes, but after a while pay no attention to them. Be sure to draw down the mosquito net close all round, and brush well in-

side

side with a large towel, to kill such mosquitoes as may still be there.

16. Chigres—a species of flea that burrows into the feet and toes; at first they occasion an itching, and then a little red lump, which becomes painful. A negro is the best hand to pick them out; and a little snuff may be put into the cavity.

17. In a well regulated regimental mess, no one sits long after dinner; his duty will not admit of it; he is either on guard, or at the evening parade. An officer need never want amusement or exercise; in his quarters he may have books, musical instruments, or employ himself in drawing; and if he has a turn for natural history, so much the better, he will find ample subjects for his purpose; in all the islands the scenery is new and beautiful, often magnificent and grand*.

It may be proper to add two receipts, one for preserving cream for several weeks or months, and the other for making egg tea, both of which may be useful in sea voyages.

Mode of Preserving Cream for several weeks or months, particularly calculated for Sea Voyages.

Take 12 ounces of white sugar, and dissolve it in some ounces of water, over a moderate fire. After the sugar is dissolved, boil it for about two minutes in an earthen vessel; after which, add, immediately, 12 ounces of fresh cream, and

---

[*] Great colds succeeding great heats, are productive of diseases; even cold nights after hot days. Many of the acute diseases of Europeans in hot countries, are occasioned by their exposing themselves incautiously to the serene or nightly dew. Arbuthnot on Air.

and mix the whole uniformly over the fire; then suffer it to cool, pour it into a quart bottle, and cork carefully. Keep it in a cool place, and it will continue fit for use for several weeks, or even months.

Mode of making Egg Tea.

It is well known how difficult it is to procure cream, or even milk, at sea, for making tea; but eggs, which may be preserved in a fresh state, by being buttered, or put up in salt, form a most excellent substitute. The mode of using an egg is this. Put in the whole egg, yolk and all, *in a raw state,* into a bowl, and unite the whole thoroughly, by working it together with a table-spoon, then pour in the tea gradually from a tea-pot, constantly stirring the mixture, so as to make it one uniform and homogeneous mass. It is hardly possible to distinguish this mixture, when properly prepared, from tea and rich cream. It is a very nourishing substance also, and may, with that view, be recommended to invalids on shore. An egg thus prepared, may likewise answer for coffee.

II.

OF ARTIFICIAL MINERAL WATERS.

All waters which are distinguished from common water, by a peculiar smell, taste, colour, &c. and which, in consequence of these properties, cannot be applied to the purposes of domestic economy, have been distinguished by the appellation of mineral water. These occur more or lest frequently in different parts of the earth, constituting wells, springs, or fountains; sometimes of the temperature of the soil through which they pass; sometimes warm, and, in some cases, even at the boiling temperature. Many of these mineral springs attracted the attention of mankind in the earliest ages, and were resorted to by those who laboured under diseases, and employed by them, either externally or internally, as a medicine. But it was not till towards the end of the seventeenth century, that any attempt was made to detect the ingredients of which these waters were composed, or to discover the substances to which they owed their properties *.

As soon as these properties were ascertained, philosophers, chemists, and mechanics, immediately endeavoured to infuse into common water similar ingredients; and they have succeeded in making those of several sorts, in particular, Seltzer water, Pyrmont, and Spa water, and the acidulous soda water.

In the year 1795, that respectable physician, Dr Pearson, of Leicester-Square in London, drew up, at the desire of the author, the following hints respecting water impregnated with fixed air, or the carbonic acid, as manufactured by J. Schweppe, late of Geneva.

"Three years ago, a person of the name of J. Schweppe, late of Geneva, called upon Dr Pearson, with a letter of introduction, to propose making those artificial mineral waters which contain a large proportion of carbonic acid, or fixed air.

On examining the waters prepared by this artist, the Doctor

---

* Thomson's System of Chemistry, Vol. III. p. 439.

tor found that they contained a much larger proportion of carbonic acid than he had ever seen before. He believes Mr Schweppe contrives to make water contain four times its bulk of this acid air. Mr Schweppe manufactures these preparations at an expence which most persons will think reasonable, and in any quantity that may be required by the public.

The advantages of water so impregnated are,

1. That, at all times, in our country, may be prepared a water, equal, or even superior, in all respects, to Pyrmont, Spa, Paulon, and other springs, whose virtues depend solely on the quantity of carbonic acid air they contain.

2. A still greater advantage is, that, by the means of water so highly impregnated, alkalies can be exhibited with much greater benefit than in any other way, and in adequate quantities, so as to be not only not disagreeable, but highly grateful to both the stomach and palate.

3. This preparation affords a most agreeable beverage, either with or without the alkaline salt, according to the palate.

4. Such a beverage must be highly useful in many diseases, as it can be now prepared in a far superior manner, and at less expence, than heretofore.

5. Such a beverage is highly salutary in the common way of living in this country, as, when mixed with wine, it is found, that a much smaller quantity of wine satisfies the stomach and palate, than wine does alone.

6. It is highly beneficial as a drink in the evening, to take off the acid apt to be produced in the stomach after wine and full meals, to dilute the fluids, when containing too much irritating matter, to carry off such stimulating matter, and to strengthen the stomach. It is here supposed that the water contains alkali.

Upon the whole, when we consider the effects of water, impregnated as it is by Mr Schweppe, with carbonic acid and with alkali, both as a *medicine*, and an article of salutary luxury, *it may be justly reckoned the greatest improvement in diet of the present age.*

If Mr Schweppe can contrive to prepare his water at a sufficiently small expence, and keep it in large vessels, it might be a valuable acquisition to the navy in particular, and also to the army, in the situation of an encampment*."

III.

---

* To many persons languishing under disease, the following information may be peculiarly acceptable, though it cannot be expected, that in every case the proposed remedies should answer.

" *Seltzer Water*,—from its pleasant taste and medical virtues, has been long in very general use. It has been very much recommended by physicians for its antiseptic powers, consequently, for its utility in many of the febrile and other diseases of large towns. It is a powerful antiscorbutic. In bilious complaints it is particularly useful, by correcting the acrimony of that fluid, and assisting the tone of the stomach and bowels, by which pain and irritation are obviated or removed. In nervous affections, it is useful, by invigorating the general system, exalting the spirits, and removing weakness. To the ill effects, whether nervous or bilious, which take place, as the debilitating consequence of hard living, it is peculiarly adapted. It is most refreshing and salutary after excess in eating and drinking, by allaying the feverish heat and thirst generally arising therefrom.

" By gently stimulating the nerves of the stomach, it increases digestion, prevents flatulences, promotes the secretions in general, particularly that of the kidneys.

" With milk, it is a very useful remedy in consumptions, making the milk sit easy on the stomach. In most of the stages of the catarrh, or common cold, either on the head or lungs, it may be taken with great utility. With wine, or syrup, it affords a most wholesome and agreeable beverage.

" It is one of the safest, as well as most cooling drinks for persons exhausted by much speaking, heated by dancing, or when quitting hot rooms or crowded assemblies.—It may be taken in the quantity of a common beer glass at a time.

" *Acidulous Soda Water.*—These waters are well known to have great efficacy in complaints of the kidneys, ureters, or bladder, when these organs are either obstructed or irritated by calculous matter, or are in an irritable or corroded and ulcerated state. Whilst they abate the acrimony of the humours

III.

DISCHARGES FROM THE BODY.

Besides the evacuations by stool, by urine, and by perspiration, there are other discharges from the human body, some of greater and some of lesser importance, of which the

---

humours, they dissolve and wash out the mucus, and clear the kidneys, ureters, and bladder, from any matter of this kind that may be lodged in them; and tend not only to prevent the generation of a calculus, or to stop the increase of one, but to diminish, as a solvent, such as are already formed. They afford the most desirable relief in the strangury; and when the urine is voided with pain and difficulty, and is thick and turbid, restore it in a short time to its natural appearance. In cases of acidity in the stomach, indigestion, and some diarrhœas, these waters will be found very serviceable. Even in the gout, those who have taken these waters for the stone or gravel, have been *cured* of both diseases by means of them.

" These waters may be taken to the quantity of a pint or more, daily, at three stated periods; morning, noon, and night, an hour previously to the several meals of the day.

" If they should produce any uneasiness in the stomach, (which is seldom the case), a tea-spoonful or two of rum, brandy, or any spicy medicated tincture, may be added.

" In very cold weather, they are sometimes best taken with warm milk. —No regimen is particularly required but such as temperance dictates.

" N. B. The three sorts of single, double, and triple Acidulous Soda Water, (so denominated from the quantity of soda salt they contain) are recommended to be taken in proportion as the stomach can bear, or as the disease requires a larger proportion of the soda. The double is generally used.

" *Acidulous Rochelle Salt Water.*—A method of giving the purgative neutral salts, which should render them not ungrateful to the palate, and make them sit easy on the stomach, has long been a most desirable object in medicine; combined with acidulated water, they operate in a small dose; and the Acidulous Rochelle Salt Water, is the most agreeable laxative, or purgative, which has been yet discovered. It is prepared in half pint bottles, the single containing two drachms, the double half an ounce of Rochelle Salt. One of these bottles may be taken in one or two doses, as is most convenient. When a purgative is required, it will sometimes be the following seem to require more particular attention, namely; 1. The semen. 2. The saliva. 3. The mucus of the nose. 4. The wax in the ears; and, 5. Artificial discharges by issues or setons.

1. The semen is a discharge of infinite importance to the human frame, but, for obvious reasons, cannot be much dwelt upon in a work of a popular nature. The later it is suffered to commence, the better; and nature itself points out the proper period for renouncing such gratifications. If indulged in before the body is fully formed, it stints the growth, and brings on languor, debility, and various other disorders; and if in old age, it is at all given way to, it soon hastens the unfortunate victim of vain desires to the grave. Manhood is the proper period of life for these gratifications, which are then natural and useful, but even then, they ought not to be indulged in to excess, for, according to the old maxim, *Rara Venus juvat, frequens debilitat* *.

2. The nature and uses of the saliva have been already explained. It is certainly a most useful animal secretion, and ought not to be unnecessarily wasted by frequent spitting. The custom of smoking tobacco also, would appear to be extremely prejudicial, at the same time, it must be admitted

---

be necessary to take two of these bottles, which contain half an ounce of the salt."

It may be proper, however, to add, that many persons have, by the constant use of soda water, produced a laxity of the bowels which they could not stop. It may be of service, therefore, in costiveness.

* There are many works in which this subject is very fully discussed, as, in Willich's Lectures on Diet and Regimen, 2d edit. chap. 9. p. 539.—Hufeland on the Art of prolonging Life, Vol. II. book 2d. chap. 4. p. 165. Valangin on Diet, chap. 5. p. 190.—Fothergill's Rules for the Preservation of Health, p. 96.—Anderson's Medical Remarks on Natural, Spontaneous, and Artificial Evacuation, p. 97.—Lynch's Guide to Health, p. 305, 306. See Medicin des Hommes, p. 123.—Turnbull's Medical Works, p. 155.; and many others, too numerous to mention.

admitted, that among the pensioners of Greenwich Hospital, who have exceeded 80 years of age, there are but few who have not been in the habit of taking tobacco in some shape or other, very freely, and yet they do not seem to have suffered from it[*]. Nature, therefore, seems to accommodate itself to bear such discharges, when they are regularly persevered in, without any material injury.

3. The mucus of the nose, is intended by nature to protect the olfactory nerves; hence, every artificial means of increasing that secretion is preposterous, unless required by some particular indisposition of the body. The taking of snuff, therefore, is in general reprehensible; and the indulgence of such a habit, must often be productive of injurious consequences[†].

4. The cerumen, or wax secreted by the glands of the auditory canal, is of great service in preserving that important organ, the ear, in a proper state. But sometimes this secretion becomes tough and hard, or accumulates so much as to diminish the acuteness of hearing; and sometimes obstructs the passage of the ear, so as to occasion total deafness. Daily washing, with cold water, will strengthen that organ, more especially if accompanied with friction, by a flesh-brush, behind the ears.—This is a practice that cannot be too strongly recommended.

5. Issues, or artificial discharges of the humours of the

---

[*] See Code of Longevity, Vol. II. Appendix, p. 117; also, p. 186 and 189. In all about 800 persons above 80, who use tobacco in some shape or other, without having been injured by that practice. At the same time, though it may be of some use to those, who, like the sailors, are accustomed to a cold and moist atmosphere, yet the remonstrances of Dr Waterhouse, against *segars* as detrimental to youth, are certainly well founded. See Code of Longevity, Vol. IV. p. 559, &c.

[†] See Willich's Lectures on Diet and Regimen, p. 532, where this subject is fully discussed.

body, have been strongly recommended for the cure of disease, by various distinguished physicians; and a recent author has stated, that, in the course of a long and successful practice, he had prescribed issues to all ages, but never could discover that they had any ill effect; on the contrary, he contends that they lessen repletion; promote secretion and excretion; clear the skin of foul defedations, and brighten the complexion *.

---

* See Anderson's Medical Remarks on Natural, Spontaneous, and Artificial Evacuation, p. 149, where other advantages attending this remedy are explained.

FINIS.

Works Published by ARCHIBALD CONSTABLE *&* Co. *Edinburgh; and* JOHN MURRAY, *London.*

I. The GAZETTEER of SCOTLAND, containing a Particular and Concise Description of the Counties, Parishes, Islands, Cities, Towns, Villages, Lakes, Rivers, Mountains, Valleys, &c. of that Kingdom. With an Account of the Political Constitution—History—Extent—Boundaries—State of Agriculture—Population—Natural History—Buildings—Seats of the Nobility and Gentry—Roads, &c. Illustrated with an Elegant Sheet Map. 2d Edition, much improved and enlarged. Price 12s. Boards.

⁂ In the present Edition of the Gazetteer of Scotland, the Publishers have been anxious to include every thing relating to that country, which they supposed might interest the native, or give information to the stranger. Besides particular accounts of all the Cities, Towns, Villages, &c. the Description of every Parochial District of Scotland is included, in which its Extent, Soil, Mode of Cultivation, and Manufactures are noticed. A Description of every remarkable Natural Curiosity, and every remain of Antiquity, is given in the Account of the Districts in which they are situated;—the principal Seats of the Proprietors are remarked; as are also the Birth-places of Eminent Men. To the volume is appended a Correct Table of the Principal Roads; and prefixed is a general Introduction. The Publishers trust, that though, from its form, the Gazetteer of Scotland is not susceptible of much embellishment of Language, yet the general Accuracy of its Statements will entitle it to particular attention: And if it shall not entirely supersede the necessity of consulting the numerous Tours, to be acquainted with Scotland, it will at least prove a valuable auxiliary to these, from the superiority of information which a work of this kind must necessarily have over others which only relate transient occurrences and observations.

II. TRACTS on the NATURAL HISTORY of ANIMALS and VEGETABLES. Second Edition, enlarged. Translated from the Original Italian of the ABBE SPALLANZANI, Professor of Natural History in the University of Pavia. By J. G. DALYELL, Esq. With Illustrations. 2 vol. 8vo. Illustrated by Eleven Copperplates. 15s. boards.

⁂ The acknowledged fame of the celebrated author of these Tracts, and the importance of his numerous discoveries, are too well established to require any additional confirmation here. His name has justly been enrolled with that of the most illustrious European physiologists; and his works will ever remain an emblem of genius and research. All bear indisputable evidence of profound investigation into the phenomena of nature, and of the most comprehensive and enlightened understanding. The Treatises on the Natural History of Animals and Vegetables will rank with the first of his productions; for the new, singular, and interesting matter they contain, will be an equal source of pleasure and admiration to the philosophic reader.

III. ESSAYS, LITERARY, POLITICAL, and ŒCONOMICAL. By JOHN GARDINER, M. D. Fellow of the Royal College of Physicians, and of the Royal Society of Edinburgh, &c. 2 vol. 8vo. 16s. boards.—These Volumes contain—Conjectures on the Origin of Language—On the different Races of Men—On the Formation of the Minds of Children, previous to a Literary

Education—On the Principal Causes that Promote or Retard Population, being the circumstances from which the precise degree of power in every State may be estimated—Historical Remarks and Observations on Government, and on the Causes which have at all times obstructed its Advancement to a Free Constitution—Observations on the Principal Causes which Promote or Retard the Advancement of Literature, Commerce, and the Arts.

IV. TRAVELS to DISCOVER the SOURCE of the NILE in the years 1768, 1769, 1770, 1771, 1772, and 1773. By James Bruce of Kinnaird, Esq. F. R. S. The Second Edition, Corrected and Enlarged. To which is prefixed, a Life of the Author. Handsomely printed in 7 volumes 8vo., with a volume of Copperplates in 4to. Price 4l. 16s. boards.

⁎ This edition of a justly celebrated work, is printed from a correct copy, intended for the press at the time of the Author's death. The use of all his original journals, correspondence, manuscripts, &c.; the concurring testimonies of later travellers, along with various other circumstances, have enabled the Editor to render the work more complete and interesting than Mr Bruce himself would have condescended to make it. To the Account of his Life, which occupies a considerable part of the first volume, is annexed a selection of letters from a very valuable correspondence, in which the names of the Comte de Buffon, the Hon. Daines Barrington, Lord Halifax, Mr Wood, Dr Hugh Blair, Mr Andrew Lumsden, Sir Robert Strange, Dr Solander, and many others, deserve particular notice.

V. The EXPERIENCED MILL-WRIGHT; or a Treatise on the Construction of some of the most useful Machines, with the latest discoveries; to which is prefixed, a Short Account of the general Principles of Mechanics, and the Mechanical, Powers By Andrew Gray, Mill-Wright. The Second Edition. Illustrated with Forty-Four Engravings. Imperial Quarto. Price 2l. 2s. half-bound.

⁎ This Work contains—General Principles and Definitions in Mechanics—Of the Mechanical Powers—Of Friction, the Application of Powers, Uniform Motion, &c.—Practical Directions for the Construction of Machinery—Of the Strength of the different parts of Machines, of proportioning the Power to the Effect, and of the Method of calculating the Velocity of Machines—Of the Strength of Machines—Proportion of Powers—Velocity of Machines—Of Water-Mills—Opinions and Experiments of different Mechanicians on their Powers and Effects—Velocity of Water-Wheels—Plan of a Thrashing Machine to be driven by Water—Section of ditto—Plan of another Thrashing Machine to be driven by Water—Plan of a Thrashing Machine to be driven by Water or Horses—Plan, Elevation, and Section of a Thrashing Machine to be driven by Wind or Horses—Elevation of a Wind-Mill to turn a Thrashing Machine—Plan, Elevation, and Section of a Snuff-Mill—Plan, Elevation, and Section of a Corn Mill—Plan, Elevation, and Section of a Barley and Malt-Mill—Plan of a Flour-mill—Section of a Sheeling-Mill—Section of a Flour-Mill with Bolting Machines—Elevation of a Flour-Mill—Plan of a Double Flour-Mill—Plan, Elevation, and Section of a Flax-Mill—Bleaching and Beetling Machines—Plan, Elevation, and Section of an Oil-Mill—Plan and Elevation of a Paper-Mill—Plan and Elevation of a Saw-Mill—Fulling-Mill, and Pumps for raising Water, &c. &c.